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ABSTRACT

The purpose of this national short-term training project was to provide trainers of rehabilitation personnel with the knowledge and skills necessary to make informed choices when considering telecommunications technology as a delivery approach in training. Training content was designed to provide both an overview of the telecommunications technologies available and an in-depth coverage of an experience with the technology which would be the most immediately accessible to the trainers. The telephone was chosen for in-depth coverage, and a teleconferenced approach was subsequently used to deliver the training in 21 locations throughout the United States. Curriculum content included an overview of existing telecommunications technologies and current applications in the delivery of continuing education and human services. Results of a post-program survey showed that 70 percent of the participants were "likely to very likely" to use teleconferencing in their work. Participants also indicated that they were able to learn new information from the teleconferenced instructional approach. (MER)

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THE USE OF TELECOMMUNICATIONS IN THE TRAINING OF REHABILITATION PERSONNEL

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individually and collectively, to project development.

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SMB
February 1980

SUMMARY

The field of rehabilitation, like society as a whole, is having to take a hard look at its current priorities and use of its resources. Yet, trainers of rehabilitation personnel are experiencing increased pressure to provide more training resources as rehabilitation professionals respond to more severely disabled populations and serve increasing numbers of clients. The challenge that faces those involved in rehabilitation education in the university setting and those involved in continuing education for rehabilitation professionals is how to maintain high quality training in the face of diminishing fiscal support.

Many of the problems in the delivery of continuing education to rehabilitation personnel have been faced by other deliverers of continuing education. Increasingly, other disciplines have been looking to telecommunications technology as a means to deliver training to personnel with very diverse training needs who are scattered throughout a wide geographic area. The purpose of this national short-term training project was to provide trainers of rehabilitation personnel with the knowledge and the skills necessary to make informed choices when considering telecommunications technology as a delivery approach in training. This was accomplished by the pursuit of four major objectives:

1. The dissemination of information on telecommunications to rehabilitation personnel trainers
2. The provision of an opportunity for trainers to have a "hands-on" experience with telecommunications technology as an instructional delivery approach

3. The structuring of a communications network which would enhance sharing and discussion among rehabilitation trainers
4. The provision of an opportunity to familiarize trainers of rehabilitation personnel with both national and regional resources in teleommunications technology which they might use at a future time.

Training content was designed to provide both an overview of the various telecommunications technologies available and an indepth coverage of and experience with a technology which would be the most immediately accessible to trainers. In view of these criteria, the technology chosen for indepth coverage and for demonstration was the telephone, and a teleconferenced approach was subsequently used to deliver the training.

To reach as many trainers as possible within the time and funding constraints of this project, 21 locations for remote training delivery were esablished througout the United States (including Alaska and Hawaii). Participants were recruited from the many professional groups representing rehabilitation training, including Regional Rehabilitation Continuing Education Programs, Rehabilitation Research and Training Centers, rehabilitation counselor education programs, staff development personnel of state Vocational Rehabilitation agencies, and trainers of rehabilitation facilities personnel.

The training program was conducted by teleconference to 21 locations simultaneously in three half-day sessions scheduled on three consecutive Fridays in the summer of 1979. Curriculum content included: an overview of existing telecommunications technologies and current applications in the delivery of continuing education and human services

(Session I); teleconferencing as an instructional delivery approach, including equipment, set-up, personnel, and cost considerations (Session II); and teletechniques--how to develop or modify existing curricula for delivery in a distant learning approach. An evaluation of program effectiveness was made through a pre- and post-program survey to measure cognitive gains, a post-program survey to assess participant satisfaction, and a cost comparison with a face-to-face national short-term training program to determine the cost-effectiveness of teleconferencing as a training delivery approach.

Over 260 participants formally registered for this program, and participant handbooks and support materials were disseminated to approximately 450 individuals. The greatest number of participants (33%) came from state VR agencies. Results of a post-program survey showed that 80% of the participants felt that they acheived their goals for this training program. The highest satisfaction rating was obtained in the area of relevancy of program content. Results did not show an increase in participants perceived satisfaction with teleconferencing for carrying out certain tasks, as a result of their participation in this training. However, 70% of the participants reported that they were "likely to very likely" to use teleconferencing in their work. Results from the pre- and post-program items used to measure cognitive gain indicate that participants were indeed able to learn new information from the teleconferenced instructional approach. Cost comparison data between a face-to-face and a distant learning approach show that savings in training resources on a per student instructional hour comparison can be substantial when teleconferencing is used.

The conclusions drawn were that since the need for information-

sharing continues to rise, in the face of lessening resources to conduct training and professional and policy-building meetings, cost-effective alternatives must be explored. The use of telecommunications to replace face-to-face meetings is such an alternative, and because teleconferencing is inexpensive, it is particularly well-suited to these current economic realities. The adaptability of networks, the ease with which they can be expanded and cut back, and the fact that they can be used for both educational and administrative purposes without alteration, combine to make teleconferencing systems attractive to enhance communication and educational efforts in the rehabilitation community at national, regional and local levels.

I. INTRODUCTION

The field of rehabilitation, like society as a whole, is having to take a hard look at its current priorities and use of its resources. Terms such as inflation, cost of living, energy crisis, fiscal restraint, and cost effectiveness punctuate the thinking and planning of most of those involved in human services. There is little doubt that we are experiencing a period of economic distress. The impact is being felt in all areas of human service delivery, and rehabilitation service delivery and rehabilitation training are no exception. The spectre of funding cutbacks, project elimination, and reduction of training programs looms as a very real possibility (Dellario, 1979).

The need for skilled rehabilitation professionals to provide quality services has not diminished. Rather, trainers of rehabilitation personnel are experiencing increased pressure to provide more training with fewer resources, as rehabilitation professionals respond to more severely disabled populations and serve increasing numbers of clients. The challenge that faces those involved in rehabilitation education in the university setting and those involved in continuing education for rehabilitation professionals is how to maintain high quality training in the face of diminishing fiscal support. In addition, ways must be found to increase the number of training programs offered to counselors in the field, who must be kept abreast of advances in rehabilitation counseling and case

management.

Perhaps with a vision of the coming need for ingenuity and resourcefulness, those who provided input to the writing of the Rehabilitation Act of 1973 added as a purpose of that act the mandate to explore new ways to deliver rehabilitation services and train rehabilitation professionals:

> The purpose of this act is to provide statutory basis for the Rehabilitation Services Administration, and to authorize programs to --Sect. 2(5) Develop new and innovative methods of applying the most advanced medical technology, scientific achievements and psychological and social knowledge to solve rehabilitation problems and develop new and innovative methods of providing rehabilitation services to handicapped individuals through research, special projects and demonstrations.

The purpose of this national short-term training project was to follow through on this mandate by providing trainers of rehabilitation personnel with the knowledge and skills necessary to make informed choices when considering telecommunications technology as a delivery approach in training. This project final report has two purposes; the first is to provide information on the developmental approach, resulting training curriculum and materials, delivery design, and results of the national short-term training program. In addition, however, it is hoped that by sharing these efforts and experiences, those interested in exploring ways to maximize rehabilitation resources will be encouraged to explore telecommunication as an alternative to costly conventional meeting and training approaches which all too quickly exhaust both travel resources and personnel time.

II. PURPOSE

A. Statement of Need

VR's Growth and the Need for Enhanced Communication

The field of vocational rehabilitation, begun in 1920 with a budget of $796,000 (Malikin and Rusalem, 1969, p. 41), has rapidly grown to include 80 state vocational rehabilitation (VR) agencies with an annual budget of $839,000,000 to service 1.8 million clients in 1978.[1] Such an increase in funding, as well as number of agency offices, personnel, and clients served, demands an efficient and effective communication network between federal, state, and local offices to keep staff, from administrators through line personnel, continually apprised of changes in federal guidelines which influence operating procedures. In such a dispersed delivery system as VR, it often becomes difficult to maintain communications with field staff at a level that assures good information flow to and from the central office.

A recent study done by the U.S. Department of Commerce (Harland and Adams, 1977) surveyed selected state and regional vocational rehabilitation agencies and found that, as in most public agencies, VR office staff communicate primarily by the printed word, telephone, and face-to-face meetings and conferences. This is often a costly, cumbersome, and inefficient way to disseminate the mass of information which should be transmitted between field and central offices. Likewise, because the VR program is statewide, coordination of staff development activities can be time consuming and require

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[1] Budget of the U.S. Government. Fiscal Year 1978, Washington, D.C.: U.S. Office of Management and Budget, p. 153.

substantial travel. Many of these activities could be accomplished more rapidly or be further augmented by using telecommunications technology, such as teleconferencing, as an alternative or addition to cross-country travel for VR district administrative meetings, attendance at seminars, or meetings with RSA regional staff

Increasing Need for Continuing Education

Rapid information expansion. At the same time that the vocational rehabilitation system has been rapidly expanding, the adult or continuing education movement has also been flourishing in the United States. The knowledge explosion in technical and health-related areas, in particular, has begun to put even the best-trained practitioners in the fields of medicine, law, teaching, the sciences, and engineering into positions where new developments make their past schooling inadequate (Hechinger, 1975, p. 16). In a time of rapid change and information expansion, continuing education has increasingly become the resource used by organizations to update and upgrade the performance of their personnel.

State Vocational Rehabilitation (VR) agencies are also faced with the challenge of keeping their staff apprised of changes in legislation and innovations which may have an impact on the quality or nature of services to VR clients. The disciplines of rehabilitation medicine and bioengineering are only two examples of the rapidly changing and expanding areas from which vocational rehabilitation draws information to provide and improve services to individuals with disabilities that present a handicap to employment. New

approaches to the delivery of information and training to line staff must be explored in order to meet this challenge.

Certification maintenance for VRC's. The discrepancy between the continuing education needs of state VR agency personnel and the capability of rehabilitation trainers to meet this need has been heightened most recently by the introduction of certification maintenance in the field of vocational rehabilitation. To meet the challenge of providing quality services to severely disabled individuals, the profession of vocational rehabilitation counseling has acknowledged the need for standards of competence and ongoing skill development for vocational rehabilitation counselors (VRC's) by instituting certification for vocational rehabilitation counselors and a five-year certification maintenance plan (McAlees and Schumacher, 1975). Initial certification is gained by passing a written examination which measures counselor knowledge on a wide variety of topics related to rehabilitation counseling. Certification maintenance, which took effect in January, 1978, requires that rehabilitation counselors must accrue 150 contact hours of continuing education during a five-year period in order to maintain certification as a VRC. Rehabilitation personnel will now be depending on trainers to provide a selection of training programs to aid them in maintaining professional certification. To meet this expectation, trainers must begin now to explore new approaches to the delivery of training, such as that afforded by telecommunications technology.

Current Inability to Meet Many Training Needs

Regional Rehabilitation Continuing Education Programs (RRCEPs)

were created and funded in 1974 by RSA in each of the ten federal (HEW) regions to aid state vocational rehabilitation agencies in fulfilling the mandate to keep rehabilitation personnel apprised of the most current methodologies in client service delivery (RRCEP Directors, 1975). In a national survey of rehabilitation staff development activities, Means and Greenwood (1976, pp. 13-14) report that RRCEPs are among the training resources most frequently used by agencies. In this report, RRCEPs are used as a representative example of training endeavors for state VR agency personnel.

Nationally, 80 state agencies provide services to handicapped individuals through a network of district and local offices in the 50 states, the District of Columbia, Puerto Rico, the Virgin Islands, Guam, and the Trust Territory of the Pacific Islands. These 80 state agencies are staffed by over 32,849 personnel from administrative through clerical support levels. There are an estimated 10,541 counselors alone; in addition, many state agencies utilize specialists, such as counselor aides or paraprofessionals, to complement their counseling staff.[2]

In comparison, the most recent listing of Regional Rehabilitation Continuing Education Program personnel[3] shows less than 70 trainers staffing the 15 RRCEPs. At the regional level, using Region X (seven state VR agencies in Washington, Oregon, Idaho, and Alaska) as an

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[2]State Vocational Agency Fact Sheet Booklet. Fiscal Year 1978. Washington D.C.: Department of HEW/OHD/RSA, pp. 200-202.

[3]Listing compiled by Dr. John Thompson, Region X RCEP, Seattle, Washington, January, 1979.

example, we find that three RRCEP training personnel are responsible for the training needs of over 1,000 staff members of the state VR systems.[4]

Ideally, training should be able to remediate the unique performance deficits or enhance the performance levels of each potential trainee. The personnel of state VR agencies represent a challenge for trainers, not only due to their wide geographic dispersion, but also the range of formal preparation, experience, and individualized learning needs with which each may come to a training session. Thus, in such a dispersed and diverse potential trainee population as VR staff represent, the trainer has little hope of addresssing the individual learning needs of all personnel. The limitations of insufficient trainer time and agency funding may often mean that state VR trainers (including RRCEP personnel and outside consultants) can only hope to partially provide adequate continuing education to the rehabilitation field. Limited funding and time means that training needs must be closely examined and only certain programs offered annually in order to serve the greatest number of trainees possible. Incorporating telecommunications technology into training delivery systems would heighten the trainer's ability to reach a larger population of trainees in a more cost-effective manner. Such technology could be used to reach potential trainees who might otherwise be precluded from training, due to lack of funds or inability to leave their offices for a period of several days.

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[4]See footnote 2.

Need for New Approaches to Address Specific Training Problems

Cost of travel, use of consultants, and software. To meet personnel training needs, state VR agencies draw upon their own staff development personnel, trainers, and consultants from Regional Rehabilitation Continuing Education Programs (RRCEPs), Rehabilitation Research and Training Centers (R&Ts), Rehabilitation Counselor Education Programs, or private training resources, depending on the nature of the training need and resources available. In most training endeavors, rehabilitation personnel are brought together in a central geographic location, which can often be very costly and time-consuming to the agency, trainees, trainers, and consultants. Although there is often value in consultants and outside resource people addressing trainees on a specific area in a given training program, fees and travel costs preclude their regular usage. Likewise, rental fees, shipping charges, and undue delays can inhibit the use of media in training programs on a regular basis, although a wide variety of software relevant to rehabilitation training currently exists (Zobrak, 1977). Substituting teleconferenced or televised broadcasts of presentations by consultants may offer a more cost-effective way to provide an opportunity to share their expertise with rehabilitation personnel.

Duplication of effort in the development of training materials. In response to the training needs of rehabilitation personnel, much time, money, and effort has been expended by RRCEPs, R&Ts, and other training resources to develop training programs and software. Unfortunately, insufficient communication and cooperation has

historically meant repeated duplication of effort and materials. Means and Greenwood (1976, p. iv) report from results of a survey done of rehabilitation staff development activities that "there is a tremendous range in the types of training programs being conducted . . . considerable thought and effort are being devoted to preparation of different training programs to accomplish similar objectives . . ." These findings are verified by a recent study conducted by the Mitre Corporation, which concluded that there is no single clearinghouse currently in existence which adequately facilitates awareness of training programs and materials already developed or emerging from RRCEPs, R&Ts, state vocational rehabilitation agencies and other training sources (Zobrak, 1977, p. 9). A better communication network between training resources is needed to prevent further duplication of efforts in the development of training materials; telecommunications technology could offer several alternatives. A central computerized training materials data base would provide regional trainers with ready access to listings of available or emerging materials. Regularly scheduled teleconference meetings in which several telephone lines are linked together by a connecting device would not only help trainers keep abreast of programs currently being developed, but could also provide a comparatively inexpensive forum for sharing expertise and information on topics of mutual concern which may have a direct impact on training.

A summary of many of the difficulties which trainers face in training development, delivery, and follow up is presented in Figure 1.

Figure 1. Common Difficulties of Rehabilitation Personnel Trainers

I. Preparation of Training

A. Doing an adequate initial needs assessment (time and money often limit the extent of input which we can get).

B. Coordinating regional training activities to avoid schedule conflicts and duplication of training efforts.

C. Maintaining ongoing communication with rehabilitation organizational administration at state, regional, and national levels to stay aware of training priorities, funding levels, procedural changes, etc.

D. Attending major conferences, training meetings, etc. (can be useful for gathering training resources, but often prohibited due to cost, time, and distance involved).

E. Becoming and staying apprised of resources (presented materials, software, etc.) which currently exist or are in the process of development to eliminate duplication of efforts, share curriculum outlines, etc.

F. Locating and securing specialists in specific topics to address a particular training group (can be a problem in identification and cost).

G. Accessing printed materials for course reference in timely manner.

H. Alerting all potential interested trainees of the training.

I. Designing a training program that will meet the needs of a broad cross section of potential trainees, with varying levels of training and experience.

II. Delivery of Training

A. Researching trainees dispersed over a large geographic area.

B. Minimizing "down time" for training (travel can add even more time off the job when there is a need to travel to a central location).

C. Providing sufficient number of training programs annually to meet the certification maintenance requirements of rehabilitation counselors.

D. Providing training when there are small numbers of trainees (e.g., those with specialty caseloads).

III. Training Follow Up

A. Conducting an effective evaluation of training.

B. Assessing on-the-job performance changes resulting from training.

C. Providing trainees with ongoing information after training.

B. Project Purpose

Dissemination of Information on Telecommunications

Section 2(5) of the Rehabilitation Act of 1973 (P.S. 93-112) acknowledges the need for continuing education, and encourages rehabilitation agencies to seek out and use innovative approaches to staff development and direct client service delivery. Recognizing the problems in delivering training to state VR agency personnel, the Rehabilitation Services Administration has already funded several projects to study the use of telecommuncations technology to aid in the delivery of training, as well as in the administration of agencies and in direct client services (i.e., Mitre Corporation, the Annenburg School of Communications at the University of Southern California, the Industrial Economics Division of the Denver Research Institute).

Many of the problems in the delivery of continuing education to rehabilitation personnel have been faced by other deliverers of continuing education (Schwarz and Johnson, 1977). Increasingly, other disciplines have been looking to telecommunications technology as a means to deliver training to personnel with very diverse training needs, who are scattered throughout a wide geographic area.

Telecommunications technology is "any transmission, emission, or reception of signs, signals, written images and sounds or intelligence of any nature by wire, radio, visual, or other electromagnetic systems, including any intervening processing and storage."[5] This

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[5]Colligan, L. Telecommunications as It Relates to RSA Programs. Prepared for RSA Research Strategy, 1976-1979, p. 221.

broadly based definition includes radio, television, satellite, telephone, and other possible means to transmit information. Research has been done and results are emerging on the use of various telecommunications capabilities to solve some of the problems faced by those who provide training to rehabilitation personnel. Such technology is already being used as a vehicle to provide continuing education to personnel in other health-allied disciplines. Before trainers of rehabilitation personnel can begin to utilize telecommunications technology in training efforts, they must learn more about the technology which is currently available, be introduced to potential applications of such technology in training, and then be aided in developing a plan to incorporate such technology into their training efforts in the most cost-effective manner possible.

Telecommunications technology currently exists which can be used effectively in the delivery of training to state vocational rehabilitation agency personnel, yet trainers have been slow to fully utilize the potential of such technology. Zobrak, et al. (1977), report from a study done on the use of telecommunications technology in rehabilitation which suggests why this might be so:

> Before more agencies begin utilizing telecommunications more fully, personnel at several levels of the VR process must have better information. At the local level, district supervisors and counselors need information about telecommunications and how it can be applied so that they can more completely define their needs to the state office. At the state level, the state director and his staff need cost and effectiveness information to make decisions regarding the type and extent of telecommunications utilization (p. 2).

Before trainers of rehabilitation personnel begin to utilize telecommunications technology to attempt to meet any of the needs

presented, they must first learn more about currently available technology and potential applications. It thus becomes not only timely, but urgent, that this information be disseminated to state VR agency administration and staff development personnel, as well as other deliverers of continuing education to rehabilitation personnel, such as regional rehabilitation continuing education programs, rehabilitation research and training centers, educators of rehabilitation facility personnel, and rehabilitation long-term training programs. It was the intent of this project to meet this need.

Experience with Telecommunications Technology

To successfully introduce any innovation into a service delivery system, time must be taken to alert the potential users of the innovation's possible applications. Experts in the field of adult education advocate learning situations which offer the learner an opportunity to acquire a more meaningful understanding of the content presented by learning from direct personal experience and having an opportunity to apply the learning to a practical problem situation (Ingalls, 1973). Telecommunications technology can provide trainers of rehabilitation personnel with the means to use this adult education principle, allowing them to reach their trainees in their own work environments, where they can readily apply their learning.

Consistent with this principle of adult learning, and also with the use of a distant learning approach, this training program had as one of its purposes to provide an opportunity for participants to get hands-on experience with telecommunications technology. This was accomplished by incorporating telecommunications into the training delivery approach. It was hoped that any initial concerns of the

trainees could be alleviated by having them use the technology and that they would then be more likely to use the approach demonstrated in their own training efforts.

Enhance Communication Among Rehabilitation Trainers

As mentioned previously, one of the difficulties in rehabilitation training is to keep apprised of existing and projected training curricula and software, as well as individuals with specific expertise who could be used in a particular training program. A distant learning approach, rather than the conventional approach in which a select group of participants are brought to a central location for several days of training, was chosen because participants could be brought together in a convenient location. This approach has several distinct advantages:

1. Far more participants could participate if a distant learning approach was used rather than incurring extensive travel costs for a select group of participants.
2. Potential participants who might have been unable to attend the training if several days away from their offices would have been necessary could take advantage of a training program that eliminated the need for extensive travel.
3. A regionalized training approach afforded the opportunity for a wide variety of individuals involved in rehabilitation personnel training on a regional level to gather.

This approach increased the likelihood that a greater number of individuals in rehabilitation training in each region could be a part

of this training. By so doing, they would not only learn about the use of telecommunications in training but also more about rehabilitation training resources within their own region. It was also hoped that this regional affiliation would afford an opportunity for groups to immediately discuss the concepts and techniques presented for implementation on a regional, as well as programmatic, level, making some approaches to the use of telecommunications in training more cost-effective by using a "user-sharing" approach.

Familiarization with Telecommunications Resources

Finally, another purpose of this project was to put those in the rehabilitation community in touch with resources (equipment alternatives, distributors, and individuals with expertise) in telecommunications technology at both the national and regional levels. It was hoped that after an initial information-sharing meeting, participants would pursue this approach with individuals or programs proximate to their own location. In this way, possible user consortia with those already using telecommunications technology in education and human services could be tapped.

III. METHODOLOGY

A timeline for project activities is presented in Appendix C.

A. Approach Development

Consultant Use

To assure that the methodology chosen for this training reflected the most extensive, yet cost-effective use of technology possible, as well as addressed the specific information needs of those in rehabilitation education and training, a group of consultants (Appendix A) were used. These individuals represented the Public Service Satellite Consortium,[6] the telecommunications in rehabilitation training project of the Denver Research Institute,[7] the Northwest Regional Educational Laboratory,[8] and rehabilitation trainers funded by the Rehabilitation Services Administration (RSA/OHD/HEW). This group gathered in Seattle in November 1978 to assist in the development of several delivery approaches and curriculum content

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[6] The Public Service Satellite Consortium is a private, non-profit organization which assists members to secure the use of satellite time and needed supportive services for educational and human services purposes (PSSC, 1660 "L" Street, N.W., Suite 907, Washington, D.C. 20036).

[7] For further information, see Katz, R.M., Elliott, L., and Milliken, K. Staff Training Via Telecommunication: Analysis of Needs and Delivery Alternatives. University of Denver, Denver Research Institute, Social Systems Research and Evaluation Division, June, 1979.

[8] The Northwest Regional Educational Laboratory has provided extensive assistance to educational projects in Alaska needing consultation on the most effective way to approach educational program delivery via telecommunications. (NWREL, 500 Lindsay Building, 710 S.W. Second Avenue, Portland, Oregon 97204).

outlines for presentation to the project advisory board.

Advisory Board

Composition. The project advisory board (see List of Advisory Board Members, Appendix B) was selected to represent the various interest groups that are involved in and have an impact on rehabilitation personnel training. Representatives were selected from: Regional Rehabilitation Continuing Education Programs (current spokesperson); Rehabilitation Research and Training Centers (current spokesperson for training); Rehabilitation Counselor Education Programs (the President-Elect of the National Council on Rehabilitation Education); those involved in professional preparation and continuing education for staff of rehabilitation facilities (spokesperson for the Association for Educators in Rehabilitation Facilities); and state vocational rehabilitation agency staff development personnel (represented by the chairperson of the Training Committee of the Council of State Administrators for Vocational Rehabilitation and three state VR agency staff development specialists). The National Rehabilitation Information Center, Rehabilitation Services Administration (RSA/HEW) Regional Office staff (the Convener for Training for the Regional Program Directors and an RSA Training Specialist), and rehabilitation service consumers (represented by staff from the American Coalition of Citizens with Disabilities) were also represented.

Advisory Board

Purpose. The purposes of the project advisory board were to:

1. React to proposed training curriculum content and delivery strategy alternatives, assisting in the development of a training program that would best meet the needs of the projected trainee population within the given time and funding constraints.
2. Assist in the identification and recruitment of potential training program participants.
3. Provide ongoing feedback on project development to assure that the project was progressing along the path that would best meet the information and experiential needs of the target audience. The advisory board was kept apprised of project activities following the December 1978 board meeting in Seattle through bimonthly reports.

B. Approach Design

Recommendations of Advisory Board

As a result of the advisory board meeting held in December 1978, it was recommended that the proposed national short-term training program on "The Use of Telecommunications in the Training of Rehabilitation Personnel" should provide the following:

1. An overview of existing and projected telecommunications technologies and their applications in continuing education.
2. An indepth description and demonstration of one or

two telecommunications technologies which are presently accessible to those in rehabilitation personnel training.

3. Information on how to design new or modify existing training curricula for use in a distant learning approach.

Delivery Approach

Change in original project design. The original grant proposal included an evaluation design component which was to be directed toward a comparision of the learning and cost-effectiveness of various training approaches, using different telecommunications technologies. The purpose of this analysis was to provide a guideline which would enable trainers and administrators of state VR agencies, as well as Rehabilitation Services Administration (HEW) staff, to make more informed choices when considering various technological alternatives. The survey of the literature revealed that a more extensive comparison of technology efforts (Becker, 1978; Flinck, 1975; and Johansen, Vallee and Spangler, 1979) had already been completed than the limited time frame and available resources of this project would allow. Therefore, the decision was made to emphasize the training, rather than evaluation, aspects of this part of the project. Training participants were provided with comparision data on the characteristics and costs of various technologies as part of the curriculum. The comparative overview served as an introduction to a more indepth description and demonstration of one particular

telecommunications approach. This information is briefly presented in the curriculum content section of this report.

Focus on teleconferencing. The telephone was chosen as the telecommunications technology which would be highlighted in this training program because it offered significant advantages to other technologies, for the purposes of this project:

1. It represented the most cost-effective and readily accessible technology to reach participants via telecommunications and thereby demonstrated the capabilities of this approach to a broad sample of rehabilitation trainers scattered throughout the United States.[9,10]
2. The project advisory board had recommended that to better ensure that the approaches demonstrated would later be implemented by participants, a technology be chosen that was readily available and low in cost. The telephone is an existing telecommunication system which is familiar, available to all, and economical. In addition, a significant amount of research has already been done on the effectiveness of the telephone

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[9]Video teleconferencing, where television-like visual signals are complemented by audio information, is still expensive--at least five times audio costs over comparable distances (Johansen, et al., 1978, p. vii).

[10]A cost comparison between a teleconferenced and a conventional training approach is presented in the results section of this report.

as a teaching aid, which could be shared with training participants (Becker, 1978: Johansen, Vallee, Spangler, 1977).

To demonstrate the effectiveness of teleconferencing as a training delivery approach, the training program was offered via teleconferencing. "Teleconferencing" is a generic term for any type of long distance discussion in which two or more separated groups are joined through a telephone system (Parker, 1976). By using a teleconferenced delivery approach to this training program, not only could the technology be demonstrated, but more participants could be reached across the country in a location that would be most geographically proximate to them. This meant that at far less cost than a conventional approach, many more participants could be reached. Rather than allotting a certain amount of training funds for trainee travel and per diem for a limited number of participants to come to a central location, these funds were converted to cover the costs of equipment and telephone time.

Consultants used. As mentioned previously, selected consultants (see Appendix A) were used to assist in the formulation of the early direction of the project. Following the advisory board and the decision to emphasize the use of teleconferencing in training, Dr. Lorne Parker and the staff of the Instructional Communications Systems (ICS) component of the University of Wisconsin Extension (Madison) were chosen as consultants in both the technical design and the curriculum

development of this project. Dr. Parker and UW-ICS staff were chosen because the University of Wisconsin has the oldest and currently the largest and most extensively used educational teleconferencing network in existence. (Over 36,000 students attend 400+ teleconferenced courses annually in Wisconsin, bringing in approximately $500,000 in revenue for the University each year.)

Planning process. To assist in systematically and chronologically planning the many details of a national teleconferenced training program, a critical path analysis was computed by staff of the University of Wisconsin. Appendix C presents the results of this analysis, including some of the tasks involved in the overall planning of this project, as well as general information on critical path analysis.

Delivery format. A sequential learning format, occurring in three half-day sessions held on three consecutive Fridays, with a week between each session, was the training approach chosen. It was believed that the spaced learning approach would afford individuals an opportunity to discuss the material presented each week with others in their organization and bring questions back to the following session. Spacing out the learning increases the probability of learning occurring and participants using the approaches demonstrated in their own work.

Fridays were chosen as the training day because it was felt that the least conflict with other scheduled activities would occur. Since teleconferencing was to be used as the

delivery approach, it was necessary to limit the length of the program; half-days were chosen. (A fatigue factor may be experienced if teleconferences last longer than two hours.)

C. Site Selection

To reach the maximum number of individual rehabilitation trainers nationwide through the teleconferencing network used for this training, the decision was made to attempt to identify at least one training location in each HEW federal region. The location of known rehabilitation training programs (i.e., Rehabilitation Research and Training Centers, Regional Rehabilitation Continuing Education Programs, graduate and undergraduate Rehabilitation Counselor Education Programs), central offices of state vocational rehabilitation agencies, and members of the Association for Education of Personnel in Rehabilitation Facilities were plotted on a map to indicate high density areas of rehabilitation trainers. It was hoped that by reaching a high density area with this training not only could more individuals participate in the training, but that such a group could share some of the technologies described in this program in future efforts.

In addition, input was solicited by mail from RSA regional office staff (see Appendix D) and those in rehabilitation training (RRCEP directors, training directors of RTCs and regional representatives of the National Council on Rehabilitation Education) in each region. In some cases, the request to host the training program came from an RSA regional office or a university. In other instances, potential host locations were identified and

requested to participate. A map identifying the 21 locations selected is shown in Figure 2. The training was hosted in and coordinated by a wide range of sponsoring institutions: RSA regional and central offices (8); universities (5); RRCEPs (3); RTCs (2); state VR agencies (2); and others (1). A list of regional program facilitators and host institutions is presented in Appendix D.

Criteria for the training facility selected were: a comfortable meeting room to hold 15-30 people; a telephone, preferably single-line, connected by a modular or four-prong jack; and barrier-free access for those with physical handicaps.

D. Use of Regional Program Facilitators

Purpose

Local program administrators at each site were critical to the effective functioning of a distant learning delivery system. These individuals assist in the identification and recruitment of program participants, the location of an appropriate training facility, the set up and testing of equipment, on-site participant registration, and the delivery of the training.

Selection Process

Regional Program Facilitators (RPFs) were selected for each site based upon:

1. Their involvement in or familiarity with rehabilitation training and/or the rehabilitation community in their geographic locale
2. Their proximity to the training site identified

Figure 2 Training Locations Identified for Telecommunications in the Training of Rehabilitation Personnel
July 20, 27, August 3, 1979

3. Their interest and willingness to participate.

The RPFs for this training were offered reimbursement for travel or any other expenses incurred but did not receive any additional compensation for their involvement.

Function in This Training

The Regional Program Facilitators in this training program assumed the following responsibilities:

1. Assisting in identification and recruitment of trainees
2. Identifying a training facility that met certain specified requirements
3. Testing and setting up the teleconferencing equipment
4. Securing other audio-visual equipment needed and operating the same during the training program
5. Disseminating participant materials at each session
6. Participating in a one-hour training program for RPFs, prior to national teleconference
7. Assisting in participant registration at each session
8. Assisting in training delivery by leading off-air discussions
9. Assisting in project evaluation

Appendix E presents the checklist of activities of RPFs for each session, providing a more detailed description of the role of these onsite coordinators. The RPFs were prepared for their responsibilities through a training program prior to the national short-term training and the use of a handbook designed to assist them in this process (see Section IV).

E. Participant Outreach and Selection

A list of potential participants was requested from the RSA regional offices in each federal region. A brochure/registration form was designed and over 1200 mailed to staff of RRCEPs, RTCs, state VR agencies, graduate and undergraduate Rehabilitation Counselor Education Programs,[11] members of the Association of Educators in Rehabilitation Facilities, consumer organizations representing individuals with disabling conditions, RSA regional and central office staff and selected administrators in federal offices, and individuals in the field of telecommunications technology. In cases where a program had three or more staff, a cover letter to the program director and multiple copies of the brochure were sent with a request that they be disseminated to appropriate staff (see Appendix F).

To reach others who might also be interested in attending this training program but who were not on any of the above mailing lists, short articles and program announcements describing the national short-term training program's content, dates, and locations were sent to journals and newsletters for those in the fields of rehabilitation and counseling (i.e., Journal of Rehabilitation, Rehabilitation World, divisional newsletters of

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[11] Graduate and undergraduate RCE programs were identified through use of the membership lists of the Council on Rehabilitation Education and the National Council on Rehabilitation Education.

the National Rehabilitation Association and the American Personnel and Guidance Association, as well as several RRCEP regional newsletters). It was requested that this information be published during the four months prior to the program.

Information was also disseminated at selected national and regional rehabilitation professional conferences in the four months prior to the training (i.e., the RRCEP annual all-staff conference held in New Orleans, January, 1979; the Region V Rehabilitation Training Conference in Dearborn, Michigan, March, 1979; the RTCs Annual Conference held in Fisherville, West Virginia, May, 1979).

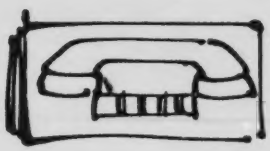
F. Equipment

Figure 3 presents an outline of the components of a teleconferencing system: station equipment, the transmission system, and a control center. Since teleconferencing was new both to many of those coordinating at local sites and projected program participants, equipment was chosen which would offer the greatest flexibility and ease of use at reasonable cost. The system chosen was a "Meet Me" Bridge for the control center, Darome Conveners for station equipment, and regular telephone lines for transmission. The Meet Me Bridge is a two-way audio system that uses regular telephone lines to link groups of people in up to 20 locations at one time (21 locations were possible during this training through the assist of a wire splice). The bridge used

Figure 3

3 COMPONENTS OF A TELECONFERENCING SYSTEM :

STATION EQUIPMENT



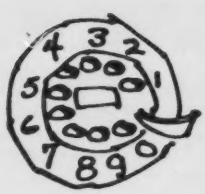
HANDSET (2 Wire) vs. "LOUDSPEAKER TELEPHONES" (2 or 4 Wire)

TRANSMISSION SYSTEM

2 Wire	vs.	4 Wire
_____		_____
_____		_____
		_____
		_____

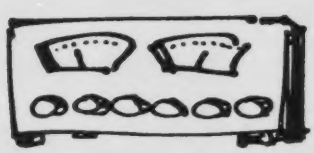
CONTROL CENTER

"Operator-assisted" Conference Call



"Dial-up" Conference Bridge

"Meet Me" Conference Bridge



Technician-controlled console

is located in Madison, Wisconsin and operated by Instructional Communication Systems at the University of Wisconsin-Extension.

To use this system, Regional Program Facilitators simply had to dial a pre-determined number at a designated time (15 minutes prior to the teleconferenced portion of the program), and the bridge would link the callers together. The operations engineer monitored the teleconference program to control the audio quality and assisted with any reception or transmission problems.

The station equipment used was a Darome Convener Model 1610 (two-wire). Darome is the brand name for a portable conference speaker with four microphones (Darome Inc., 10 South Jefferson Street, Harvard, Illinois 60623). To use this equipment, each training room had to have a telephone (preferably single line to cut down on added line noise) connected to the wall by a modular or four-prong jack. The microphones were placed around the room at each site so as to facilitate maximum participant involvement. Appendix G presents a more indepth description of the set-up procedures for the use of this equipment. The teleconferencing equipment, with appropriate adaptors, was mailed out two weeks prior to the first session. To familiarize RPF's with this equipment, each one was assisted by telephone during the two weeks prior to Session I by a technician from the Control Center in Madison in an equipment set up and a technical check out.

Each training site was also equipped with a carrousel slide projector and screen, which were procured by the RPF.

G. Curriculum Development and Materials Dissemination

The curriculum, presented in greater detail in Section IV, was developed through the following process:

1. Recommendations of project consultants
2. Recommendations of project advisory board
3. Brief survey of existing audio-visual media presenting applications of telecommunications technology in human service delivery and education (conducted by the Public Service Satellite Consortium)
4. Use of existing resources developed by the University of Wisconsin Instructional Communication Systems staff, with modifications to heighten relevancy to the needs of rehabilitation trainers.

Training materials (RPF handbook, participant handbooks and accompanying materials, feedback forms, and slides, etc.) were sent out to Regional Program Facilitators several weeks prior to the first training session.

Also worthy of note is that two 400-level university credits were made available through Seattle University to trainees who attended all three sessions, completed two assignments, and paid a $70 tuition fee.

H. Evaluation Design

Content and Methodology

The primary source of information for the evaluation of this project consisted of self-report questionnaires which all participants were asked to complete on the first and last days of the training program. In addition, all comments made by the participants during the teleconferences were noted by the project director. Other comments were offered by some participants through oral and written correspondence after the project was completed. Six factors were drawn out of the items contained in the evaluation instruments:

1. Characteristics of the program participants
2. Knowledge gained through participation in the program
3. Satisfaction with the training program
4. Perceptions of the effectiveness of teleconferencing in the accomplishment of certain tasks
5. General feelings toward teleconferencing
6. Open-ended requests for comments and suggestions

were included on all evaluation instruments

Evaluation Instruments

The following forms were used to gather information from the training program participants (see Appendix K for samples).

1. Sign-in sheets (participants were asked to sign in each session)
2. A Pre-Program Survey, administered before the first session

3. A Feedback Form, handed out as a rating tool at the end of the first session

4. A Post-Program Survey , administered at the very end of the entire training program

Data Analysis

Frequency distributions were calculated for background data on the participants and to analyze participant satisfaction ratings of the program. In addition, T-Tests for significance were used to compare participant knowledge about, and attitudes toward teleconferencing, before and after the training program. Narrative comments by participants were read by several project staff. Rough frequency counts were taken on comment categories and a compilation of suggestions was developed.

I. Dissemination of Project Findings

Completed and projected dissemination of the materials developed and results of this national short-term training program are as follows:

1. Presentations at professional meetings and conferences

   A. National Rehabilitation Association Annual Conference, Chicago, Illinois, September 1979

   B. Third Annual Conference on Continuing Education in Human Services, Ann Arbor, Michigan, October 1979

   C. RRCEP Annual All Staff Conference, San Francisco, California, January 1980

   D. Region VIII Rehabilitation Training Annual Conference, Colorado Springs, Colorado, June 1980

2. Publications

   A. Region III RRCEP Newsletter, spring, 1979

   B. Region V RRCEP Newsletter, summer, 1979

   C. RRCEP Continuing Education Monograph (proposed), spring, 1980

   D. Related articles will be submitted to rehabilitation journals

3. Training materials on loan

   Copies of the handbooks developed for Regional Program Facilitators and participants, supplementary materials, slides, and edited tapes of conference proceedings are available from the National Clearinghouse of Rehabilitation Materials (Oklahoma State University, Stillwater, Oklahoma 74074).

IV. TRAINING CONTENT

A. Training for Regional Program Facilitators

Pre-Program

On Monday prior to the first session, a one-hour training program for Regional Program Facilitators was conducted via teleconference. The purpose of this hour was to afford a time for RPFs to become acquainted with each other, project and ICS staff to answer questions on technical or delivery procedures for the upcoming sessions and confirm training times, and review training procedures for upcoming sessions. A "Handbook for Regional Program Facilitators" was developed, which provided a detailed checklist to guide RPFs through the activities of each session. Included in this handbook was a checklist for pre-program set up and guidelines for pre- and post-teleconference activities at each location, as well as a script of the slide-tape presentations for each session to facilitate the RPFs following along with the training presentation. A checklist for preparation activities and agenda for the RPF training is presented in Appendix E.

Interim Briefing and Communication

A second teleconference for RPFs was conducted prior to Session II, which served as a debriefing of Session I and a preparation for the second training session. In addition, project staff made periodic follow-up phone calls to selected RPFs to check on suspected technical problems, as well as solicit informal feedback on participant perceptions and reactions which could

enhance presentations in remaining sessions.

B. Curriculum Content

Curriculum Outline

Agendas for all three training sessions are presented in Appendix H. Training was presented by Susanne Bruyere, Project Director; Dr. Lorne Parker; and staff of the University of Wisconsin-Extension, with additional presentations from selected individuals. In general, each session was four hours in length, including two to two and one-half hours of teleconferenced training (on-air). The remainder of time was spent in off-air discussion activities at each location. Off-air activities were designed to prepare participants for the teleconferenced presentations, synthesize those presentations, and ready participants for upcoming sessions. Highlights of these three sessions are briefly described below.

Session I: Telecommunications and Rehabilitation: An Overview

The purpose of this session was to provide participants with a brief overview of the various telecommunications technologies currently available which can be used for educational purposes and to describe existing applications of such technologies for continuing education and human service delivery.

Brief (15 minutes) presentations were made by Lita Colligan, Acting Director of the Office of Telecommunications Policy (HEW); John Boor, Past Associate Director of the WAMI[12] project;

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[12]WAMI is an acronym of the states of Washington, Alaska, Montana, and Idaho, where the University of Washington has been conducting education for medical students and practitioners via satellite since 1977.

Dr. Ruth Katz, Director of an RSA-funded Telecommunications and Staff Training project, Denver Research Institute; and Dr. Paul Bowerman, Technical Director for Policy Consultations, Department of Social and Rehabilitation Services, State of Oklahoma.[13]

Dr. Lorne Parker, using a slide accompaniment, presented an overview of available technology, describing various systems, costs, and applications of each. A brief overview of some of the comparisons made between characteristics of various telecommunication systems is presented in Appendix H. At the end of Session I (off-air), each group generated a list of possible applications of teleconferencing in rehabilitation activities within their own region. A summary of these applications is presented in Appendix I.

Session II: Using Telecommunications in Training Today

Session II was to provide participants with specific information on the use of teleconferencing in the delivery of continuing education. Using slides and reference materials in participant handbooks, Dr. Lorne Parker presented an overview of the teleconferencing system, including equipment needs and costs, the components of a teleconferencing system, and how to get started in teleconferencing. An outline of cost considerations in setting up a teleconference and a preliminary cost and feature comparison

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[13]The Rehabilitative and Visual Services Division, the Department of Institutions, Social and Rehabilitative Services of Oklahoma has been using teleconferencing for the past three years to gather consumer input on service delivery (Westerheide, et al., 1978).

of various systems in presented in Appendix H. Student satisfaction with a distant learning experience was also discussed.

During this session, participants were given an opportunity both to experience the flexibility of the teleconferencing system being demonstrated and to interact in small groups, by splitting the network into four groups of five sites each. To provide a task-oriented structure to the experience, each group was assigned a Case Study (see Appendix H) to work on and report back on in the final session.

Session III: Teletechniques

The purpose of Session III was to provide participants with information on how to develop new curricula or modify existing training curricula for a distant learning approach. Staff of the University of Wisconsin Instructional Communication Systems, using slides and materials in participant handbooks, presented information on the "whys" of instructional design, the four design components of teletechniques (humanizing, participation, message style, and feedback), interactive techniques for teleconferencing, and evaluation systems for teleconferencing.[14]

Dr. Elizabeth Young, President of the Public Service Satellite Consortium, gave a presentation which outlined the services of PSSC, described The National Satellite Network, and provided a brief summary of existing and projected efforts in the use of satellite technology in continuing education efforts.

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[14] A comprehensive coverage of effective approaches in teleconferenced instruction can be found in the publication Bridging the Distance (Monson, 1978) provided as a reference handbook for participants in this training program.

To put participants in touch with telecommunications technology resources in their own community, project staff had assisted RPFs in identifying individuals with telecommunications technology expertise in their own region. RPFs were asked to request that these individuals make presentations (either in person or by teleconference) to the local group at the end of Session III.

RPFs were provided with a "Plan for Regional Use of Telecommunications" (see Appendix E) to structure the final wrap-up discussion and encourage future use of the approaches presented in this training. This was to be completed at the end of Session III and mailed to project staff. A report on the results of these plans is presented in Section V, Results.

C. Training Materials Produced

The following materials were produced:

1. A regional program facilitator's handbook
2. A participant handbook
3. Slides to accompany teleconferenced presentations

Participant handbooks were disseminated at Session I. Materials were color-coded for specific sessions. Supplemental instructional support materials (e.g., a glossary of terms for teleconferencing) were sent out between sessions to RPFs for distribution at subsequent sessions.

Copies of the handbooks for regional program facilitators and participants, slides, and an edited audio tape copy of the teleconferenced presentations are available for loan from the National Clearinghouse for Rehabilitation Materials (Stillwater, Oklahoma).

V. RESULTS

A. Participation

Attendance

The table below reflects the number of participants indicated on sign-in sheets supplied by the facilitator at each location. (The number of reporting locations for each session is also noted.) A total list of participants for all three sessions is included by site in Appendix J.

Table 1 Session Attendance

Session number	Number of sites reporting	Number of participants
I	19	260
II	16	147
III	16	125

Registration for Academic Credit

During initial registration, 30 training program registrants indicated an interest in receiving the two academic credits available for this program through Seattle University. However, only one participant actually paid the $70 tuition fee and completed the necessary assignments to fulfill course requirements.

Demographic Characteristics of Participants

The following information was tabulated from data collected from 80 program participants who attended all three sessions. The majority (61%) of this group were male.

Age. The average participant age was approximately 34 years.

Table 2 Average Age

Age	Number	Percentage
20-25	2	2.5%
26-35	35	43.8%
36-45	28	35.0%
46-older	14	17.5%

Education. The average participant had completed 6.5 years of education beyond high school.

Table 3 Educational level

Years beyond high school	Number	Percentage
0-4	10	12.4%
5-6	39	48.9%
7 or more	31	38.7%

Number of years in present organization. The participants' average number of years in their present organizations was five and one-half.

Table 4 Years in Present Organization

Years in present organization	Number	Percentage
1 or less	19	23.8%
2-5	28	35.0%
6-10	20	27.6%
11 or more	11	13.6%

Type of employing organization. The project director coded survey items which requested the participant's position or occupation and the name of the organization into the categories

listed below.

Table 5 Type of Employing Organization

Type of organization	Number	Percentage
Rehab. Research and Training Centers	16	20.2%
Regional Rehab. Continuing Ed. Program	7	8.8%
Rehab. Counselor Ed. Programs	7	8.8%
State VR Agency Staff	26	33.0%
Federal Office Staff	9	11.3%
Other (hospitals, telecommunications specialists, university settings other than rehab. education, etc.)	14	17.7%

Conference and Communication Approaches of Participants

Number of "face-to-face" conferences attended in last 12 months. The average number of "face-to-face" conferences attended was 10.

Table 6 "Face-to-Face" Conferences Attended in Preceding 12 Months

"Face-to-face" conferences attended	Number	Percentage
0-5	31	38.7%
6-10	24	30.1%
11-15	9	11.1%
16-25	8	9.9%
26-50	6	7.4%

Number of "conference calls" participated in during preceding 12 months. Participants had averaged four calls.

Table 7 "Conference Calls" Participation During Preceding 12 Months

Participation in "conference calls"	Number	Percentage
0	25	31.3%
1-3	28	35.0%
4-7	22	21.2%
8-12	5	6.2%
20	3	3.7%

Number of "teleconferences" attended during the last 12 months. The average number was 0.6, indicating the newness of this experience to many of the participants. Seventy-four percent of the participants had not teleconferenced at all in the last 12 months.

Table 8 "Teleconferences" Attended During Preceding 12 Months

"Teleconferences" attended	Number	Percentage
0	59	73.7%
1-2	15	18.7%
3-5	3	3.7%
6-8	2	2.4%

Summary of average attendance across various conference types. The average participant's conference-going behavior is dominated by face-to-face conferences (about 10 per year), followed by conference calls (about four per year) and then teleconferences (about 0.6 per year).

Communication mode most frequently used on the job. Almost 49% of the participants use face-to-face communication most frequently, while 29% use print most often, and just over 22.5% most frequently use the phone.

Communication mode with which participants are most comfortable. The majority indicated that they are most comfortable in face-to-face communication situations, followed by print, and then phone.

Familiarity with others at the teleconference site. The average participant had at least seen most of the other people at his or her site before.

Table 9 Familiarity with Other Participants

Degree of familiarity	Number	Percentage
Not at all familiar	29	36.2%
Somewhat familiar	19	23.8%
Know on a working basis	27	33.7%
Know very well	5	6.3%

B. Knowledge Gains

Participants were asked three questions before and after the training program to test for recall of some of the basic technical and program design aspects of teleconferencing.

Significant cognitive gains resulted on all three test items. The T-Test of significance showed all three items had significant gain beyond the .0001 level (two-tail test).

Each item is reproduced below with associated statistics.

1. To your knowledge, may regular phone lines be used during a teleconference?

Table 10 Pre- and Post-Program Responses to Test Item 1

Responses	Pre-program %	Post-program %
YES (desired response)	70%	93.8%
DON'T KNOW or NO	30%	6.2%

2. Name four techniques for improving a teleconference program

Table 11 Pre- and Post-Program Responses to Test Item 2

Correct responses	Pre-program	Post-program
0	92.5%	52.5%
1	7.5%	8.7%
2	0%	6.3%
3	0%	8.7%
4	0%	23.7%

3. Name up to three of the basic technical components of any teleconferencing system.

Table 12 Pre- and Post-Program Responses to Test Item 3

Correct responses	Pre-program	Post-program
0	22.5%	18.8%
1	40.0%	12.5%
2	33.7%	31.3%
3	3.7%	37.5%

C. Satisfaction Measures

Participant attitudes were measured on seven levels:

1. Did the participants feel they achieved their main goals in the teleconference?
2. What were the satisfaction ratings of participants for the first session of the training program?
3. What were the satisfaction ratings of participants for the entire training program?
4. How satisfied were participants with using teleconferences for carrying out different tasks?
5. What were their general feelings toward teleconferencing?
6. What is their likelihood of using teleconferencing on the job after completing this training program?
7. Has this training program made participants feel any more comfortable with handling teleconferencing equipment?

Goal Attainment

A substantial majority (80%) of the participants felt that they had achieved their goals.

Satisfaction Ratings for Session I

One-hundred-seventy "feedback forms" were collected from participants, and the responses to three rated items (general rating, relevance, and effectiveness) are illustrated below.

Figure 4 Overall rating for Session I

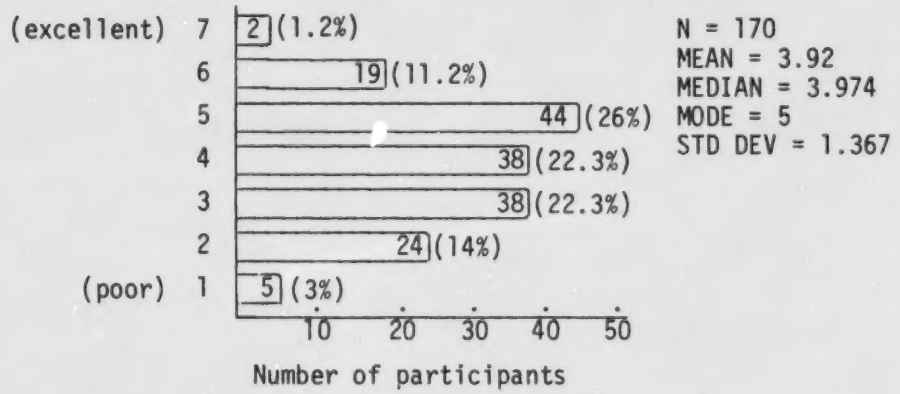


Figure 5 Relevance rating for Session I

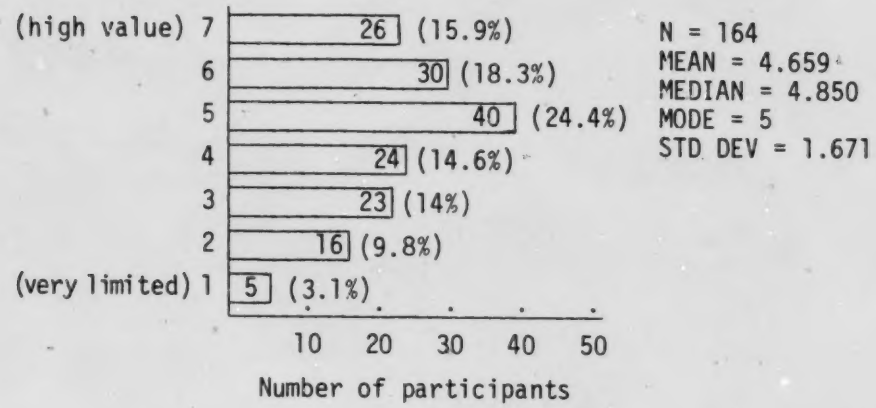
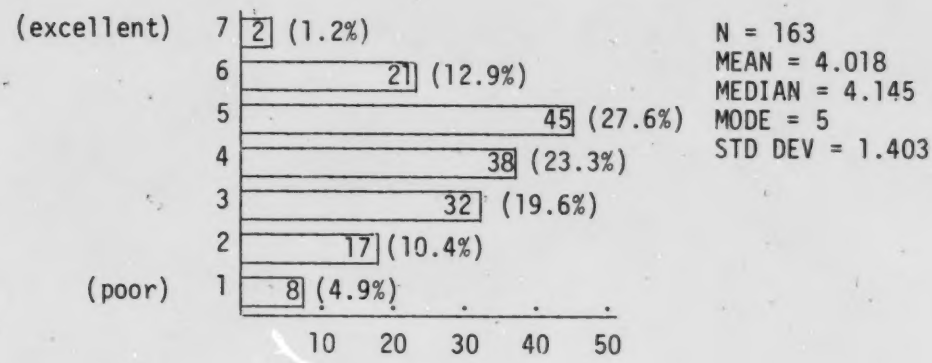


Figure 6 Effectiveness of Session I presenters



Satisfaction Ratings for the Entire Training Program

Figure 7 General rating for the entire training program

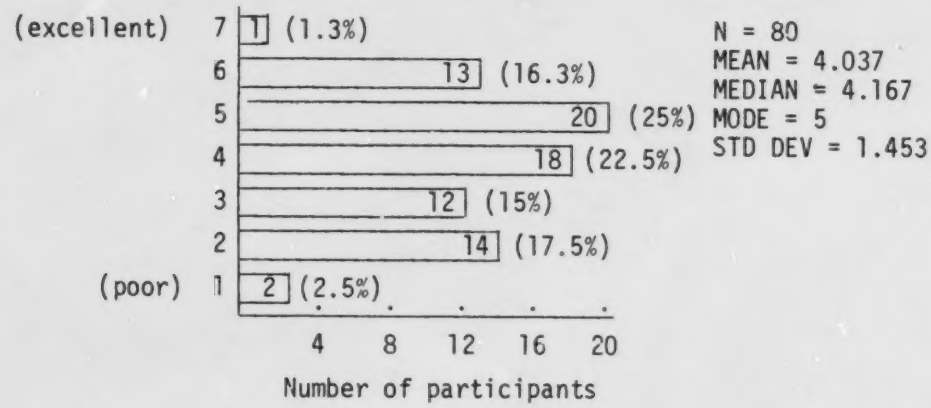


Figure 8 Relevance rating for the entire training program

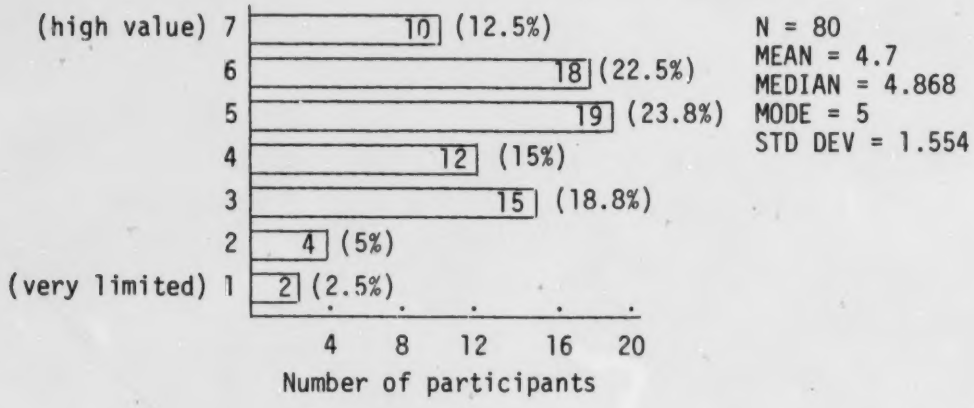
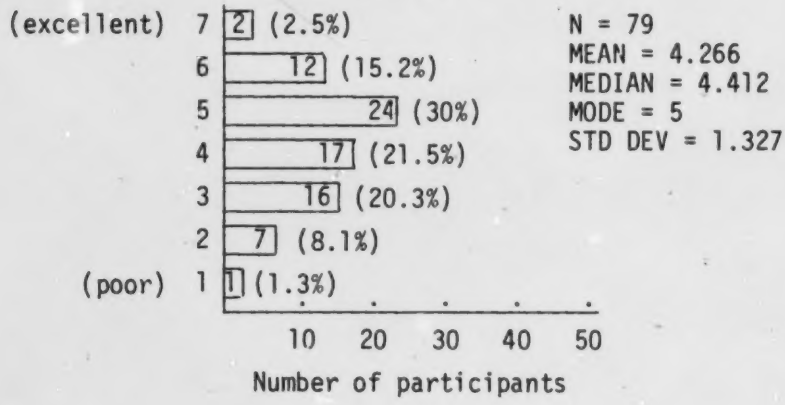


Figure 9 Effectiveness of presenters during the entire program



Participant Satisfaction with Teleconferencing

Satisfaction with teleconferencing for carrying out certain tasks. The participants rated teleconferencing on a 1-7 scale, from completely satisfactory to completely unsatisfactory, for the use in six different task situations.

The data showed that participant attitudes did not change significantly before and after the teleconference. In general, teleconferencing was rated as slightly better than the mean in

terms of being satisfactory for these specific tasks.

The task of "Getting to Know Someone" was the only exception, receiving more ratings on the unsatisfactory side of the scale. "Giving or Receiving Information" was rated as the most satisfactory use of teleconferencing. The average rating for all of the tasks was 3.5, or slightly toward the satisfactory end of the scale.

General feelings toward teleconferencing. Participants were asked to indicate their feelings toward teleconferencing using 12 semantic differential scales. The scales contained seven rating levels, with four as the middle.

Before the training program, the participants exhibited a slightly positive feeling toward teleconferencing. At the end of the training program, that feeling shifted very slightly back toward the middle of the scale.

The feeling with the greatest deviation from the average or middle rating was "importance." Here as well as in the narrative comments, the participants indicated that they consider teleconferencing to be an important tool for the rehabilitation field.

Likelihood of use. Participants were asked how likely they were to use teleconferencing in their rehabilitation training efforts. A considerable majority (70.3%) indicated that they were "likely" or "very likely" to use teleconferencing.

Feeling comfortable with equipment. When asked "How comfortable would (do) you feel setting up and operating teleconferencing equipment?", 77.2% of the participants replied "comfortable" to "very comfortable." A T-Test on this item showed that a

statistically significant (.014, two-tail) number of participants experienced an increased feeling of comfort.

D. Cost Considerations and Comparisons

Cost Considerations

As a part of the training program, participants were presented with information on the range of considerations which should be taken into account when contemplating a teleconferenced approach to training delivery. These can be briefly summarized as follows:

1. Personnel-intensive activities
   a. Needs assessment
   b. Marketing/promotion
   c. Scheduling
   d. Coordination
   e. Program planning and development
   f. Technical support
   g. Clerical
2. Program-related activities
   a. Program development
   b. Training of the trainers
   c. Program production
   d. Evaluation
3. Logistical (includes production costs)
   a. Promotional costs
   b. Production of materials
   c. Postage and shipping charges
   d. Supplies
   e. Additional contingencies

4. Technical system considerations

   a. Station equipment

   b. Transmission system

   c. Control center

A more complete explanation of what should be considered under each of these items is included in Appendix H.

Comparison with Conventional Training Approach

During the course of the training, participants requested that cost considerations be presented to them on a hypothetical training program so they could better evaluate actual expenditures which might be involved in a teleconferenced training approach. In response, the project director developed a one-page comparison of cost and approach considerations between hypothetical conventional and teleconferenced training programs in Region X (Washington, Oregon, Idaho, and Alaska). This comparison is presented in Table 13. The first column delineates the costs and approach considerations which must be taken into account in doing a training program, whether by conventional (participants commute to a central location) or teleconferenced means. In columns two and three, a comparison is presented of approximate costs. As the total figures indicate, the minimum savings that could be expected by using a teleconferenced program, rather than a conventional training approach, is 35%. If WATS[15] or FTS[16] could be used, rather than commercial telephone lines, savings could be increased to 43% of

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[15]Wide Area Telphone Service

[16]Federal Telephone System

Table 13 Instructional Cost Comparison Between a Conventional and Teleconferenced Regional Training Program

COST/CONSIDERATIONS	CONVENTIONAL[a]	AUDIO TELECONFERENCED[b]
Participant travel and per diem[c]	$ 9,400 ($188/P* x 50 Ps)	-----
Room rental	150 ($75/day x 2 days)	-----
Cost in staff time[d]	10,350 (50 Ps x 3 days x $69/day)	$ 6,900 (50 Ps x 2 days x $69)
Trainer's cost	413 (total cost)	150
a. Salary	(225)	
b. Per diem	(188)	
Training materials	Costs relevant to training program	200 (additional cost for slides and postage to each site)
Consultant/guest presenter[f]	388 (total cost)	50
a. Fee	(200)	
b. Travel and per diem	(188)	
A-V equipment	As needed for training (e.g., carrousel slide projector)	Carrousel slide projector needed at each site
Rental of receiving equipment[g]	-----	400
Use of local program coordinators[h]	-----	850 (2 days x 5 sites @ $85/day)
Use of Meet-Me Bridge	-----	2,400 (16 hours @ $150/hour)
Telephone[i]	-----	2,400 (commercial) 800 (WATS)
TOTAL COST	$20,701	OR $13,350 (commercial) $11,750 (WATS)
Cost per student contact hour[j]	$ 25.87	$16.68 (commercial) OR $14.63 (WATS) for 50 participants 8.34 (commercial) OR 7.34 (WATS) for 100 participants

[a]A two-day training program conducted in a central location in the region; participants must travel.

[b]Same training content conducted via teleconference in five sites in eight two-hour sessions.

[c]Computed on average travel and per diem costs in Region X for RRCEP X training in FY 1979.

[d]Computed on a monthly average salary for a VRC II @ $1,379/month; extra day spent in travel.

[e]Computed on a monthly average salary for an RRCEP trainer @ $1,500; extra day spent in travel.

[f]For illustrative purposes, assume brought in for a part of one day's presentaton.

[g]Use of Darome Convener (four microphones) at each location @ $40/month/location.

[h]Computed on a monthly average salary for a VR supervisor @ $1,697.

[i]Estimated cost of $30/hour use of commercial telephone lines and one-third this cost for WATS or FTS lines; varies from state to state.

[j]Calculated by dividing the total cost by the number of student contact hours; student contact hours are computed by multiplying the number of participants by the total number of training hours.

*Participant

original costs.[17] Cost effectiveness benefits of a teleconference system for training or regularly scheduled meetings are more fully realized, however, when such a system is established for repeated usage. With regular and multiple-purpose uses, the rental costs of end-instrument equipment presented here could be spread over many other activities, making the per training program costs of a teleconferenced program even lower.

Another way of presenting cost comparisons between various approaches to training delivery is by computing costs per student contact hour. This is calculated by dividing the total program costs by the number of student contact hours (number of participants multiplied by the number of training hours).[18] As Table 13 shows, a regional training program may average approximately $26 per student contact hour, compared to $17 when a teleconferenced approach is used. An even greater cost savings is realized when more participants are added to each of the remote training locations, which a teleconferenced approach makes possible at no extra cost. For example, if 20 rather than 10 participants were allowed to attend the training at each of the five locations and WATS lines were used, costs per student contact hour would be reduced to 28% of the total cost of this training for 50 participants brought to a central location for a two-day program.

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[17] The telephone rates used are averages used to demonstrate the comparison; exact rates will vary from state to state.

[18] A formula devised by the University of Wisconsin-Extension (Parker, et al., 1977).

Table 14 compares the actual cost of a national short-term training program offered to 56 rehabilitation professionals in a conventional approach (FY 1979-1980) and the expenses incurred for training distribution for the telecommunications national short-term training program via an audio-teleconferenced approach. There is a 65% savings realized by the teleconferenced program when cost per student contact hour is compared. Even though significant expenditures were incurred in the teleconferenced approach in equipment rental, phone line charges, and the development and production of the printed materials and audio-visual accompaniment needed for this approach, the expense in travel and per diem to bring 56 participants and speakers to a central location for a face-to-face meeting much exceeds the distant learning approach on a per student contact hour comparison.

Table 14 Instructional Cost Comparison Between Actual Face-to-Face and Teleconferenced National Training Programs

COST ITEM	CONVENTIONAL[a]	TELECONFERENCED[b]
1. Presenters and trainee travel and per diem	$20,035.45 (56 people)	---
a. Travel (includes air and ground transportation) Per diem (meals)		
b. Lodging	3,858	---
2. Meeting room rental	425 (3 days)	---
3. Presenter fees	2,850	$ 400[c]
4. Training materials		
a. Development	---	5,650
b. Production	660 (100 copies of manuals)	4,828.84[d]
5. Bridge time (11 hrs. @ $150/hr.)	---	1,650
6. Rental of station equipment (21 locations @ $47.50/mo. for two months)	---	1,995
7. Telephone charges	---	5,112.80
8. Expenses of Regional Program Facilitators (Reimbursed for expenses where travel to site was necessary)	---	500
9. Postage		
a. Mailing of station equipment	---	230
b. Mailing of instructional materials	---	1,271.16
TOTAL COST	$27,828.45	$20,887.80
Total number of instructional hours	1,008	2,174
Cost per instructional hour[e]	$ 27.60	$ 9.60

[a]A two and one-half day national short-term training program conducted in FY 1979-80. Fifty-six participants were brought to a central location.

[b]Expenses incurred for the current teleconferenced training program conducted in three half-day sessions in 21 locations

[c]This figure does not include consultant fees paid to Lorne Parker and UW-ICS staff for consultation on project planning and implementation, which was a one-time cost necessary in a demonstration project of this kind and, therefore, not representative of regular teleconferenced training costs.

[d]Represents 500 sets of print participant materials, 40 sets of print coordinator materials, and 21 sets of slide materials.

[e]Cost computed by dividing total costs by total number of instructional hours (# of participants x # of training hours).

E. Summary of Participant Suggestions and Comments

The Post-Program Survey (see Appendix K) included an item which asked participants to "please indicate your comments, suggestions, and questions." Participant comments were listed, and where an emphasis or trend emerged, were clustered for summarization. Four areas for discussion surfaced: pre-program preparation; program content; program design; and group interaction. Comments which reflect suggestions for future changes or improvements in teleconferenced training programs, such as the one conducted for this project, are presented below.

Pre-Program Preparation

Comments in this area suggest that participants felt that an advance training program for participants on how to use the teleconferencing equipment would have been helpful. It was also suggested that printed materials be sent in advance so that participants could read through them and be better prepared to question the key presenters.

Program Content

A number of suggestions surfaced on program content. Some participants felt that program objectives needed to be more specific and that the training purpose needed to be clearly outlined (perhaps in written or visual format). It was also suggested that such a training program should begin with even more basic information on the topic than that which was presented and that the presenters be able to respond to the needs of specific participants, such as cost considerations.

Program Design

The suggestions which seemed to cluster under program design included items on agenda, format, and use of off-air activities. Some participants felt that the agenda must be more tightly adhered to than it was for this session (e.g., East Coast participants experienced difficulty when the program ran over the 4:30 p.m. projected ending time). It was suggested that even more variety be added to such a training program; specifically, more use of visuals, shorter segments, and more time for participant interaction. More off-air time was also recommended, where "canned" materials could be presented ahead of the on-air/teleconferenced portion of the program. It was also suggested that there be more time for local or regional interaction among participants.

Group Interaction

Several participants felt that the group which attended this training program was too heterogeneous and suggested that smaller numbers of participants, with more homogeneous interests and background, be involved in future programs. It was also recommended that a more structured learning environment be used, where the moderator would minimize "small talk" (it was not clear whether this referred to teleconferenced portions only or also local program interaction), yet encourage an atmosphere where occasional touches of humor could surface.

For the reader interested in further information on participant comments, selected participants' suggestions and comments (not necessarily reflected in the above summary) are presented in Appendix L.

F. Regional Use of Telecommunications

As previously mentioned, one of the purposes of having this training session presented by teleconference was to facilitate discussion by local participants on the potential of such an approach for regional training efforts. Although it was recognized that after this teleconferenced training, many such programs would occur informally and in a much more expanded time frame than this project could allow, some efforts were made to increase the likelihood of regional planning and cooperation taking place.

Regional Plan

At the end of Session III, Regional Program Facilitators were asked to explore with the participants future uses of the telecommunications approaches presented in training in their own regions. To facilitate getting this information back to the respective project directors, each RPF was sent an outline of questions to formulate such a regional plan (see Appendix E). Twelve regions responded to this request (two of these by telephone); the remainder indicated that they either had not had sufficient time to pursue this discussion at the end of the third session, or the composition of the group made such a regional training plan inappropriate.

Of the sites responding, eight listed a variety of training activities projected for the coming year. Independent living (five sites) and training needs assessment (three sites) received multiple mention.

RPFs were asked to project "which of these training activities might be accomplished more cost-effectively and/or in a more timely manner by the use of telecommunications technology." Eight of the responding sites listed possible applications for projected regional training efforts; these are listed with other applications in Appendix I.

Use of Local Telecommunications Resource People

Regional Program Facilitators were given encouragement and assistance in identifying individuals in their locale who have an expertise in telecommunications and who would be willing to share information on projects in which they are currently involved with participants in the training site nearest to them.

Across the 21 locations, 10 resource people were brought in specifically to address the group. Most of these individuals represented either nearby universities, where telecommunications was being used as an educational approach, or local telephone companies. Several other locales chose to use participants in this training program who had telecommunications expertise, rather than to bring in additional resource consultants.

Use of Bonus Bridge Time

As previously mentioned, each site was offered one hour of the Meet-Me Bridge capability at the University of Wisconsin, to be used within one month following Session III. The purpose of this gesture was to encourage program participants to hold a follow-up teleconference, at no cost to them for bridge time, to pursue ideas related to the regional use of teleconferencing in rehabilitation personnel training.

One location, the Commonwealth of Virginia Department of Rehabilitative Services at the Woodrow Wilson Rehabilitation Center, made use of this time. A teleconferenced meeting among rehabilitation personnel trainers in Region III was held to present and discuss the potential of teleconferencing as a training approach. Many other sites indicated an interest in making use of this time, but expressed an inability to mobilize a committee for a meaningful teleconferenced meeting with specific intent within the short time allowed to plan such an activity before the end of the project year. A few sites also indicated that the heterogeneity of their group made it difficult to generate interest in pursuing a follow-up program, the focus of which would be to pursue common goals in teleconferencing as a training delivery approach for rehabilitation personnel.

VI. SUMMARY AND DISCUSSION

A. Attendance

Information from sign-in sheets indicate that there was a decrease in attendance of the three sessions; 260 participants signed in for Session I, compared to 125 for Session III. It is difficult to determine to what extent attendance actually might have decreased over the three sessions since not all locations returned sign-in sheets for all three sessions; 19 sites returned a list of participants for Session I and 16 for Session III. A significantly larger number of participants may have attended each session than indicated by the figures in Table 1.

Although the exact number of trainees in attendance at all three sessions is difficult to determine from registration sheets submitted from the 21 locations, completed pre- and post-program surveys validate the consistent attendance of a minimum of 80 participants at all three sessions. This number compares favorably to the average of 50-75 participants who can be brought in to a national short-term training program conducted in a face-to-face approach.

While it must be acknowledged that some attendees may have chosen not to return to subsequent sessions because they found the content inappropriate for their needs or were not comfortable with the teleconferenced delivery approach, informal feedback from RPFs points to a variety of other factors affecting continued attendance. RPFs reported that a significant number of participants spoke of their inability to attend all three session due either to

conflicting business commitments or vacation schedules, Friday afternoons being a time when both kinds of conflicts, particularly in summer months, could be highly likely. In addition, RPFs indicated that many attendees came solely to experience the new approach, rather than to master program content, and felt that this need was satisfied by attending one session.

RPFs also reported that many more individuals came to various parts of the program than signed registration sheets. The extent to which other individuals may have been exposed to the information and approach of this session can be validated to some extent by the fact that over 450 sets of participant materials were dispersed over the 21 locations. RPFs were asked to return any unused materials so they could be reused and an index of materials dissemination could be estimated. Only 50 manuals were returned, and RPFs reported that the rest were disseminated to conference attendees.

Attrition can be a problem in any training program, whether held in a conventional or a teleconferenced approach. In most training programs, attendance is not taken after the first day so that attrition for a particular training session is rarely closely scrutinized in a face-to-face training approach. In contrast, attendance was purposefully noted at each session of this teleconferenced program to determine whether continued attendance at a teleconferenced training program should be an area for further scrutiny and consideration.

It also must be acknowledged here that the Regional Program Facilitator plays a critical role in assisting in continued attendance at a distant learning session. This person provides onsite cues to participants as to how important it may be for them to maintain regular attendance at distant learning sessions. This idea, gained from the experience with this national short-term training program, seems to be verified in the literature. Johnsen, et al., (1979) suggest that a weakness of audio teleconferenced programs can be that they seem to require more control by a chairperson than face-to-face meetings.

B. Registration for Credit

Worthy of brief discussion here also is the fact that although 30 individuals indicated interest at initial registration in taking this program for academic credit, only one individual followed through in pursuing this option by paying the tuition fee and completing course requirements. Several variables may have prevented more individuals from pursuing academic credit, such as inability to pay the tuition fee, or attend all three sessions, or participant's unwillingness to complete two written assignments. Certainly this is an area that bears further investigation if training programs and universities want to pursue the delivery of credit courses in a distant learning approach, which is not only feasible but also highly desirable to assist professionals attempting to meet certification maintenance requirements for rehabilitation counselor certification.

C. Characteristics of Participants

The "average" participant was 35 years old, with approximately 6.5 years of education beyond high school, and an average of 5.5 years of experience with his or her current organization. The majority (61%) of the participants were male. The greatest percentage of participants (33%) were state VR agency staff, followed by Rehabilitation Research and Training Center staff (20%). The high number of attendees from state VR agencies may reflect the pressure which many state agencies are currently experiencing to find alternative ways to conduct training and meetings in the face of severe cutbacks in travel funds.

Of the 80 individuals whose pre-program demographic data was available for analysis, 28% indicated that they attended 11 or more face-to-face conferences a year. By comparison, these participants had participanted in an average of four conference calls and 0.6 teleconferences over the past 12 months. Forty-nine percent of the participants use face-to-face communication most frequently, and 81% indicated that this was indeed the communication system with which they are most comfortable when compared to using print or telephone to communicate. These findings appear to be consistent with the study done by the U.S. Department of Commerce, mentioned earlier in this report, which found that VR office staff communicate primarily by the printed word, telephone, and face-to-face meetings and conferences (Harland and Adams, 1977).

D. Participant Satisfaction

Perhaps related to this expressed bias of participants away

from forms of communication other than face-to-face, results did not show an increase in participants' satisfaction with teleconferencing for carrying out certain tasks, or their general feelings toward teleconferencing, as a result of their participation in this training. These findings appear to be consistent with findings from other studies. Johansen, et al., (1979) report that a weakness of audio teleconferencing can be that audio appears to promote more initial skepticism on the part of users than does video or face-to-face (p. 161).

In contrast to these findings, however, 70% of the participants reported they were "likely to very likely" to use teleconferencing in their work. This coincides with the high ratings for the "importance" level indicated by most participants on the attribute scale. More than 75% of the participants said they would be comfortable using the teleconferencing equipment demonstrated in this training program.

Eighty per cent of the participants felt they had achieved their goals for this training program. The mean satisfaction rating for the overall training program on a seven-point scale (from "excellent" to "poor") was 4.03. The highest satisfaction rating was obtained on the item which asked for relevance of these materials to the participant's work (58.8% gave this a rating of 5 or higher). The mean "relevance" rating for the teleconferenced training was 4.7 on a seven-point scale. Participants rated "Giving or Receiving Information" as the task which is, in their

perception, most satisfactorily accomplished via teleconferencing, while "Getting to Know Someone" received a lower rating.

These ratings appear to be comparable to satisfaction ratings obtained for a face-to-face national short-term training program conducted during FY 1979-80. The average "interest" level rating obtained for the face-to-face approach was 3.96 on a five-point rating scale. The average rating for "usefulness" across all presentations was 3.73 (five-point scale).

E. Knowledge Gains

Results from the pre- and post-program items used to measure cognitive gain indicate that participants were indeed able to learn new information from the teleconferenced instructional approach. As a result of the training, 24% more participants were aware at the end of the three sessions that regular phone lines could be used during teleconference. While no participants (of the 80 returning both pre- and post-program surveys) were able to identify two or more techniques for improving a teleconferenced program prior to the training, 39% of these respondents could identify two to four such techniques at the end of the program. Prior to the sessions, only 35% of the participants could identify three of the basic technical components of any teleconferencing system, compared to 69% at the end of the program.

While no comparable knowledge gain measures were available from the national short-term training program delivered in a face-to-face approach for comparison purposes, there are references

in the literature which offer a basis for comparision not only with conventional educational approaches but also with other forms of telecommunications instructional efforts. In a survey conducted by Rao and Hicks (1972) the researchers reviewed 18 experiences in teaching by telephone and concluded that students learn as much or more in telephone classes as in face-to-face discussion. Parker, et al., (1978) report that the results of research studies done over the past 35 years indicate that "little media," such as teleconferencing, when compared with "big media," such as instructional television and computer-assisted instruction, or traditional classroom instruction, "will perform as well or better than the alternative method on a specific educational task" (p. 6). What appears to be most important in any learning approach is that the learner have an opportunity to interact with the instructor, which a teleconferenced approach does allow. It also allows the more reticient participant to voice questions without the hesitancy sometimes induced by face-to-face interaction with an instructor. (In this training program, several participants with both communication and physical disabilities commented on the desirability of a system where they could interact with others who could not see their disability.)

F. Cost Considerations and Comparisons

The cost considerations outline presented in Appendix H provides a comprehensive coverage of the areas which those exploring a teleconferenced approach to instructional delivery should consider.

Many of the items presented are common to most training programs offered in a face-to-face approach (e.g., participant outreach costs, curriculum development, evaluation) and, therefore, should not mean additional expenditures for an existing, well-developed continuing education program.

The remainder of the cost considerations presented in Appendix H are offered as an overview of the expenses which might be incurred when choosing teleconferencing as an approach to continuing education delivery. When any procedural change is made in an organization, substantial initial financial investments may well be needed, recognizing that the new approach will mean a better use of resources in the future. Indeed, if existing training programs initiate use of teleconferencing as an alternative to face-to-face delivery of continuing education, initial investments in consultant time and equipment purchases or rentals will be required.

As the cost comparision data illustrated, however, the savings can be stubstantial on a per student instructional hour comparison when teleconferencing is used. In addition, when these costs are spead over multiple uses of the same system, the investment per use becomes very minimal, and the savings to an organization's training and overall communication efforts can be most impressive.

As mentioned earlier, most VR agency staff communicate primarily by the printed word, telephone, and face-to-face meetings and conferences; however, Christie, and Elton (1975) estimate that about 40% of current business meetings could be conducted by audio or audio-plus-graphics. In addition, travel costs increased 40%

in 1978 and 50% in 1979, with projected further increases. "Teleconferencing, on the other hand, decreased in cost 10% last year and will continue to decrease as more and more companies become involved" (Smith, 1979, p. 67).

G. Suggestions to Improve Teleconferenced Training Programs

From comments of participants, observations of project staff, consultants, Regional Program Facilitators, and recommendations from the literature, the following suggestions for future teleconferenced training programs can be summarized:

1. Selection of appropriate trainees, seen as important in face-to-face training, may be even more critical for a distant learning approach. If participants are not interested in, or motivated to learn, the content, their lack of attention to the training may be distracting to others. Also, poor selection can be a factor in participant attrition.
2. It may be desirable to have a more homogeneous group for a given training program than was in attendance at this session. In this way, although some input from those with more expertise may be lost, instructors can better gear content to a pre-determined level of participant preparation.
3. Audio teleconferencing is effective for information exchange and dissemination for large groups, but when more interaction is desired, fewer locations might heighten ability to problem-solve, ask questions, and

share ideas.

4. It can be helpful, although not necessary, for teleconferencing participants to have met face-to-face.
5. If the trainee population can be identified in advance, it would be helpful for participants to have their printed materials before the program, so they will be better prepared to direct questions to instructors during the session.
6. Regional Program Facilitators play a critical role in the success of distant learning and should be carefully chosen, trained, and remunerated for their services.

H. Accomplishment of Project Objectives

Dissemination of Information

The chief purpose of this training program was to disseminate information about the use of telecommunications technology for the delivery of continuing education to rehabilitation personnel. A minimum of 260, and possibly as many as 450 individuals received the participant materials designed for this program and attended some portion, if not all, of the three sessions.

This training program and the accompanying printed materials were designed to provide participants with background information to assist them in making informed choices about telecommunications technologies for future needs with their own organizations. With this goal in mind, the three sessions were designed to provide:

1. An overview of telecommunications technologies alternatives, including hardware cost, characteristic comparisons, and existing and projected applications in education and human service delivery.
2. More indepth information on costs and approach considerations for one technology (teleconferencing).
3. Information on ways to design or modify existing training curricula for delivery in a distant learning approach.

Experience with Telecommunications Technology

To provide participants with an opportunity for "hands-on" experience with the technology and training approach being presented, this training program was delivered via teleconference to 21 locations across the United States. Teleconferencing was chosen as the technology to be highlighted and demonstrated as it was felt that, given cost and availability characteristics, it represented an approach which would be most readily usable by participants when they returned to their organizations.

Teleconferencing, as one of the "intermediate technologies," has the following characteristics enumerated by Johnsen, et al., (1978, p. 3):

1. Workable on a small scale
2. Simple to operate and repair, thus encouraging user skills and creativity
3. Makes efficient use of existing resources

4. Accessible to users

5. Cost is low to moderate

6. Encourages decentralized control

Enchanced Communication Among Rehabilitation Trainers

A minimum of 260 individuals involved in training and the administration of rehabilitation programs attended this training in 21 locations from Boston to Honolulu, Atlanta to Anchorage. These participants represented Regional Rehabilitation Continuing Education Programs, Rehabilitation Research and Training Centers, state VR agencies, training programs for facilities personnel, and rehabilitation counselor education programs, as well as other federal and telecommunication agencies.

This cross section of rehabilitation personnel trainers were brought together to explore the possible use of telecommunications as a way of meeting the challenges of continuing education delivery, on both regional and national levels. It was hoped that the regional clustering design would encourage individuals to open new channels of communication with their colleagues, as well as establish new links with hitherto-unknown fellow professionals.

The "mini-nets," or smaller teleconferenced groups at five locations, seemed to be most effective in encouraging participant interaction in the teleconferencing system.

While a one-year project does not allow an empirical judgement to be made as to whether this training did enhance communication among rehabilitation trainers, informal feedback from RPFs suggests

that this goal was met, at least on a first-step basis. It was reported that in both the communication necessity between RPFs for project set up and the ensuing on-site interaction structured by the training program, many productive discussions revolving around training areas in general, and use of telecommuncations in training in particular, took place. Following this training program (although it is difficult to say that it is strictly as a function of this experience), several regions are beginning to plan the use of telecommunications for training delivery in FY 1980-81.

Familiarization with Telecommunications Resources

The final major purpose of this training program was to familiarize program participants with telecommunications technology resources on both a regional and national level. This objective was met in the following ways:

1. Printed participant materials were provided, containing a variety of resource items:
   a. Bibliography of publications on teleconferencing
   b. Bibliography of HEW publications on telecommunications
   c. Selected articles and reprints on telecommunications
   d. Glossary of telecommunications terms
   e. Sample agenda for a teleconferenced training program for rehabilitation personnel
2. The on-air training program gave participants an opportunity to hear presentations from and address questions to individuals with expertise in or knowledge about:

a. Telecommunications projects funded by HEW for education and human service delivery

b. The use of satellites for continuing education distribution to rural areas

c. The cost feasibility of the use of telecommunications in the delivery of training to rehabilitation personnel

d. The use of teleconferencing as a way to gain the input of rehabilitation services consumers

e. Teleconferencing as an educational delivery approach

f. Design of curricula for a distant learning approach

g. Evaluation of distant learning instruction

h. Future direction of satellite communications

The end of the third session was structured so that participants could hear presentations from and direct questions to individuals from their own geographic locale who had expertise in telecommunications or were knowledgeable about existing efforts which rehabilitation trainers might be able to learn from or make use of for future training efforts.

VII. CONCLUSIONS AND RECOMMENDATIONS

The most important question to be answered by this project is whether the potential of the communication system demonstrated can fill a need of various rehabilitation educational and service delivery institutions and rehabilitation professionals throughout the United States for continuing education. Education and training via teleconferencing is not a cure-all; for certain instructional tasks, teleconferencing cannot replace face-to-face programs or classroom trainers. Yet, as this project has demonstrated, training and education via teleconferencing might well be the answer to many problems facing vocational rehabilitation programs today. With proper planning and implementation, teleconferencing can be an effective distant learning communications system.

Training funding, as well as resources for professional travel, are becoming increasingly constrained, with strong pressures to justify any expenditures. Because teleconferencing is inexpensive, it is suited to these current economic realities. The adaptability of networks, the ease with which they can be expanded and cut back, and the fact that they can be used for both educational and administrative purposes without alteration, make teleconferencing systems attractive for vocational rehabilitation centers in national, regional, and local areas.

One of the greatest advantages of teleconferencing as an informational system is its great versatility. Not only can the system be adapted to varying numbers of listeners at various listening stations, but changing state or federal priorities do not necessitate major alteration of the system.

A. Advantages of Telecommunications

In summary, the following are benefits of a teleconferenced approach to instructional and organizational communication efforts in rehabilitation:

1. Extended access to selected groups
   a. Isolated professionals in rural areas
   b. Working people who cannot attend on-campus instruction
   c. High school and elementary students
   d. Home-bound or hospitalized students
   e. Students and adult learners in sparsely populated areas
   f. Special interest groups, such as consumers
2. As a time saver
   a. Eliminates travel time
   b. Reduces professionals' time away from work in order to fulfill continuing education needs
   c. In administrative capabilities, teleconferencing is faster than writing and more convenient than individual phone calls to various persons
   d. Trainers do not have to spend a lot of time in travel to training site
3. As a money saver
   a. Reduces traveling expenses
   b. Costs can be shared by institutional groups or departments using the teleconferencing system, as compared with single ownership of communication

facilities

c. A teleconferencing system, once installed, can be adapted to many uses, such as training needs assessment, advisory board meetings, reaching consultants, etc., thereby reducing total cost of educational program delivery

d. The system allows institutions to share costs, and thus, enables them to offer a greater number of higher quality educational programs to more students for less cost

4. Advantages in training

a. A teleconferencing system offers a way to provide quality instruction to rehabilitation professionals in remote rural areas of the limited states

b. Comparision studies indicate students learn as much in teleconferencing instructional systems as in other modes of instruction

c. The system allows personalized communications between teacher and student

d. It has proven to be a very cost effective way to provide educational information to widely dispersed groups or individuals

e. Maintenance and operating expenses are low

f. Can be adapted to many educational instructional needs

g. Provides immediate feedback and two-way communication

h. A teleconferencing system offers flexibility in planning and scheduling by accommodating taped programs as well as live lectures; using projected visuals, both audio and projected materials may be recorded and played back as needed

i. The system allows class offerings for a limited number of students in different remote locations simultaneously

j. Makes possible the use of consultants who otherwise could not be utilized because of time and money constraints

k. Makes possible the sharing of both trainers and training curricula across regions

l. Makes possible a more rapid dissemination of new information to line practitioners as it becomes available (i.e., information on independent living rehabilitation)

B. Recommendations for Future Direction

1. Vocational rehabilitation and the new Department of Education should develop the use of teleconferencing systems on national, regional, and local levels

2. In conjunction with the establishment of teleconferencing systems on the various levels, training programs on teleconferencing should be made available to potential participants and program leaders to assure the effective use of such a distant learning system

3. An important function of any distant learning system is

the coordination of local facilitators (people responsible for the facilities, equipment, and local group organizations); training programs and guidelines should be established for program facilitators so they can work as part of a total team assisting in the distant learning process

4. Grant review processes should strongly consider programs which demonstrate that they are exploring the use of telecommunications as cost-effective alternatives to face-to-face meetings and training programs
5. Training stipends should be used to establish ongoing distant learning telecommunications systems on both a national, regional and local level, rather than for travel or per diem
6. Governmental agencies should use the teleconferencing system to monitor grants and to share informational resources within the federal government
7. Teleconferencing should be used to deliver human services to consumers
8. Additional visual systems, such as slow scan television, computer graphics, and work processing, etc., should also be incorporated as needed into the existing teleconferencing systems, once established

In summary, to those who are interested in pursuing telecommunications in training, Johansen, et al., (1978, p. 68) offers the following as five basic prerequisites which heighten the

likelihood of success in the implementation of a new system;

1. Demonstrated need for educational services or expanded communication
2. Openness to trying out new techniques
3. Commitment of an effective advocate
4. Adequate start-up and continuing funding sources
5. Adequate accessibility of basic teleconferencing equipment and information

The need definitely does exist in the field of rehabilitation for new ways to expand training efforts and enhance organizational communication. What remains, then, is for those involved in rehabilitation personnel training and the management of rehabilitation agencies to cultivate in themselves and others an attitude of openness to new ways and new technologies to begin to meet these needs, and to begin to commit resources to establish teleconferencing systems to take the place of many of the costly and time-consuming face-to-face meetings and training programs which are currently conducted.

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APPENDIX A

List of Project Consultants

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APPENDIX B

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APPENDIX C

Critical Path Analysis
Planning Approach

THE USE OF TELECOMMUNICATIONS IN THE TRAINING OF REHABILITATION PERSONNEL: PROJECT PLANNING AND IMPLEMENTATION ACTIVITIES

Activities	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.
1. Selection of Advisory Board	---													
2. Meeting with Consultants		---												
3. Advisory Board Meeting			---											
4. Selection of Participants					---									
5. Curriculum Development				----------	----------	----------	----------	----------	----------					
6. Site Selection					----------	----------	----------	----------						
7. Participant Outreach							----------	----------	----------	----------				
8. Selection of Regional Program Facilitators								----------						
9. Equipment shipped & checked										--				
10. RPF Training											-----			
11. Training												----		
12. Evaluation												--------		
13. Project Final Report													-------- *	
14. Mailing of Final Report														--- *

*The project final report completion and mail out was actually completed in February, 1980

DESCRIPTION OF CRITICAL PATH METHOD*

WHAT IS CPM

Critical Path Method analysis is a planning and scheduling technique first developed in 1956 by James E. Kelly Jr. of Remington Rand and Morgan Walker of E.I. duPont de Nemours to facilitate the management of engineering projects (McIsaac, Romero, Stofflet: 1972). The CPM is designed to assist with working out and implementing answers to the following questions:

What work is to be done?

How will the work be done?

What resources are available to perform the job?

How will the work be divided?

Who will do the work?

When will the work be done?

How will the work be monitored, directed, and controlled?
(McIsaac, et al., 1972)

The planning component of CPM Involves the development of specific objectives and the definition of activities which will lead to attainment of those objectives. The duration, cost, and person responsible for each activity is then identified. These activities are arranged in order and and sequence in the form of a network utilizing arrows to represent the activities , and circles to represent the events which mark the start and

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*This background information and the Critical Path Method used for this project were developed by Paul Edison-Swift, Research Assistant in the Instructional Communication Systems at the University of Wisconsin/Madison.

finish points of each activity. The events need not be named, but they are assigned numbers which are used as tags to identify all activities.

Since some activities parallel each other, and often both are prerequisites for the same subsequent activity, a device called a dummy activity (represented by a dotted arrow) is used to: 1) eliminate the problem of having two activities labeled with the same event numbers; 2) serve as a constraint to make sure that all previous activities have taken place which are prerequisites for the next activity. By looking at the CPM network in the "network" section of this report, you should be able to identify events: # ; activites: ————————> ; and dummy activities: ----------> .

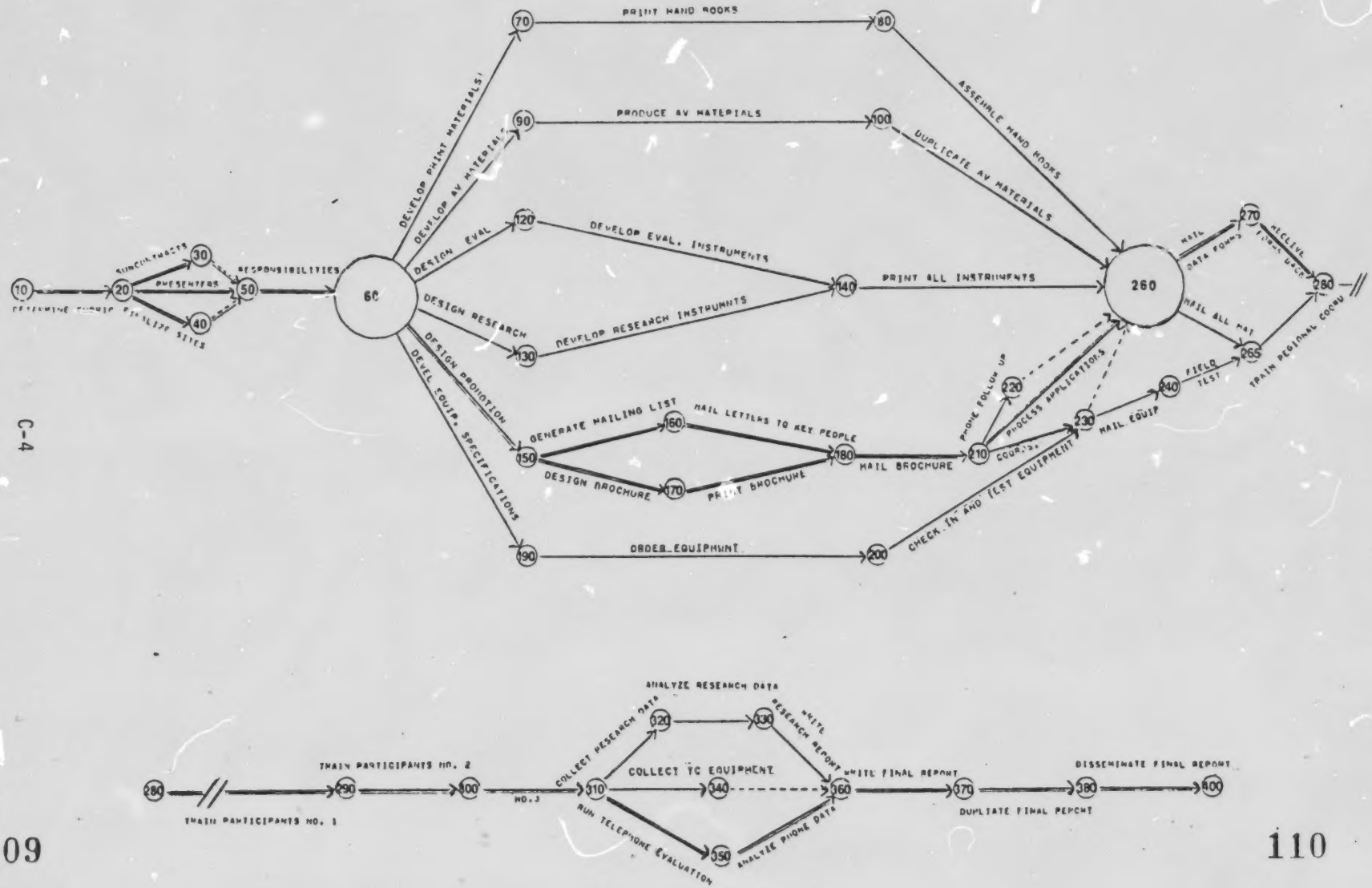
As an end in itself, this type of network presents some unique advantages for project management:

1. A clear path is established
2. Interrelationships of activities must be explicitly defined
3. The nature of each activity must be made clear and its contribution to the project becomes obvious.

(McIsaac, et al., 1972)

WHAT THE COMPUTER DOES

Using computer input sheets, we note event numbers for each activity, code who is responsible, note the duration, estimate the date when the activity should be completed (this is just for speculation purposes, it does appear on the print-out though), note the desired length of work week, enter dates for all holidays, and supply cost information if available. Using all this information and being sensitive to the contingencies of the network, the computer will caluculate and print a schedule for the completion


10
20
30
40
50
60
70
80
90
100
120
130
140
150
160
170
180
190
200
210
220
230
240
260
265
270
280
DETERMINE SUBJECT FACILITY SITES
SUBCONTRACTS
PRESENTERS
RESPONSIBILITIES
DEVELOP PRINT MATERIALS
DEVELOP AV MATERIALS
DESIGN EVAL
DESIGN RESEARCH
DESIGN PROMOTION
DEVEL EQUIP. SPECIFICATIONS
PRINT HAND BOOKS
PRODUCE AV MATERIALS
DEVELOP EVAL. INSTRUMENTS
DEVELOP RESEARCH INSTRUMNTS
GENERATE MAILING LIST
DESIGN BROCHURE
MAIL LETTERS TO KEY PEOPLE
PRINT BROCHURE
MAIL BROCHURE
ORDER EQUIPMENT
ASSEMBLE HAND BOOKS
DUPLICATE AV MATERIALS
PRINT ALL INSTRUMENTS
PHONE FOLLOW UP
PROCESS APPLICATIONS
EQUIP.
CHECK IN AND TEST EQUIPMENT
MAIL EQUIP
FIELD TEST
MAIL ALL MAT
MAIL DATA FORMS
RECEIVE DATA FORMS
TRAIN REGIONAL COORD
280
290
300
310
320
330
340
350
360
370
380
400
TRAIN PARTICIPANTS NO. 1
TRAIN PARTICIPANTS NO. 2
NO. 3
COLLECT RESEARCH DATA
ANALYZE RESEARCH DATA
WRITE RESEARCH REPORT
COLLECT TC EQUIPMENT
RUN TELEPHONE EVALUATION
ANALYZE PHONE DATA
WRITE FINAL REPORT
DUPLICATE FINAL REPORT
DISSEMINATE FINAL REPORT

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of the project (when cost info. is entered, many schedules result). The computer does this by looking at the duration of each activity, and the summation of related activity times. When two activities converge it notes which activity takes longer. Through this process of adding, subtracting, and analyzing activity durations, the computer calculates what is known as the Critical Path. Activities along this path are those which take the longest to complete. In other words, if any of these activities are delayed at all, then the entire project will be delayed by that same amount of time.

This is where the concept of "Float Time" can come into play. Activities along the critical path have zero float time...there is no leeway as to when the activity may take place. Activities which are not on the critical path have float time. In other words, since they are associated in some way with activities which take longer to complete, there is float or "slack" time available for these (noncritical) activities to work with. Because an activity is noncritical does not take away from its importance at all, it just means that that activity is associated with another activity which happens to take longer to complete.

There are three types of float time. Total Float is equal to the amount of time which an activity may be delayed wihtout delaying the completion of the project. Use of total float time may delay the completion of other related activities, but it will not delay the completion of the project. Free Float on the other hand is float time provided to an activity by limitations of other activities. Use of free float time will have no effect on subsequent activities. Independent Float represents the amount of time an activity may be delayed beyond its earliest start and still not delay any other activity in the network.

WISCONSIN INFORMATION SYSTEMS - CPM ANALYSIS

CRITICAL PATH METHOD ANALYSIS REHABILITATION TELECONFERENCE RUN 2

DATE = MAR.19,1979 TIME UNIT = DAYS COST UNIT = DOLLAR

ACTIVITY LIST

SCHEDULE = 0 ACTIVITY COUNT = 51 EVENT COUNT = 38

DURATION = 134.0 DIRECT COST = .0

PREC. EVENT	SUCC. EVENT	RES CODE	DESCRIPTION	C S	DATE COMP	DURATION	DIRECT COST	EARLIEST START - FINISH		LATEST START - FINISH		TOTAL FLOAT	FREE FLOAT	INDEP. FLOAT
10	20	CO	DETERMINE CURRICULUM		02APR79	10.0	.0	.0 03/19/79	10.0 04/02/79	.0 03/19/79	10.0 04/02/79	.0	.0	.0
20	30	SB	FINALIZE SUBCONTRACTS		09APR79	5.0	.0	10.0 04/02/79	15.0 04/09/79	10.0 04/02/79	15.0 04/09/79	.0	.0	.0
20	40	SB	FINALIZE SITES		09APR79	5.0	.0	10.0 04/02/79	15.0 04/09/79	10.0 04/02/79	15.0 04/09/79	.0	.0	.0
20	50	SB	LINE UP PRESENTERS		09APR79	5.0	.0	10.0 04/02/79	15.0 04/09/79	10.0 04/02/79	15.0 04/09/79	.0	.0	.0
30	50		DUMMY			.0	.0	15.0 04/09/79	15.0 04/09/79	15.0 04/09/79	15.0 04/09/79	.0	.0	.0
40	50		DUMMY			.0	.0	15.0 04/09/79	15.0 04/09/79	15.0 04/09/79	15.0 04/09/79	.0	.0	.0
50	60	CO	DETERMINE RESPONSIBILITIES		11APR79	1.0	.0	15.0 04/09/79	16.0 04/10/79	15.0 04/09/79	16.0 04/10/79	.0	.0	.0
60	70	CO	DEVELOP PRINT MATERIALS		09MAY79	20.0	.0	16.0 04/10/79	36.0 05/09/79	35.0 05/08/79	55.0 06/07/79	19.0	.0	.0
60	90	PE	DEVELOP AV MATERIALS		02MAY79	15.0	.0	16.0 04/10/79	31.0 05/02/79	31.0 05/02/79	46.0 05/23/79	15.0	.0	.0
60	120	PE	DESIGN PROGRAM EVALUATION		25APR79	10.0	.0	16.0 04/10/79	26.0 04/25/79	41.0 05/16/79	51.0 05/31/79	25.0	.0	.0
60	130	PE	DESIGN RESEARCH COMPONENT		25APR79	10.0	.0	16.0 04/10/79	26.0 04/25/79	41.0 05/16/79	51.0 05/31/79	25.0	.0	.0
60	150	SB	DESIGN PROMOTIONAL CAMPAIGN		18APR79	5.0	.0	16.0 04/10/79	21.0 04/18/79	16.0 04/10/79	21.0 04/18/79	.0	.0	.0
60	190	PE	DEVEL EQUIP. SPECIFICATIONS		18APR79	5.0	.0	16.0 04/10/79	21.0 04/18/79	36.0 05/09/79	41.0 05/16/79	20.0	.0	.0
70	80	SB	PRINT HAND BOOKS		16MAY79	5.0	.0	36.0 05/09/79	41.0 05/16/79	55.0 06/07/79	60.0 06/14/79	19.0	.0	.0
80	260	SB	ASSEMBLE HAND BOOKS		17MAY79	1.0	.0	41.0 05/16/79	42.0 05/17/79	60.0 06/14/79	61.0 06/15/79	19.0	19.0	.0
90	100	PE	PRODUCE AV MATERIALS		23MAY79	10.0	.0	31.0 05/02/79	41.0 05/16/79	46.0 05/23/79	56.0 06/08/79	15.0	.0	.0
100	260	PE	DUPLICATE AV MATERIALS		06JUN79	5.0	.0	41.0 05/16/79	46.0 05/23/79	56.0 06/08/79	61.0 06/15/79	15.0	15.0	.0
120	140	PE	DEVELOP EVAL. INSTRUMENTS		02MAY79	5.0	.0	26.0 04/25/79	31.0 05/02/79	51.0 05/31/79	56.0 06/08/79	25.0	.0	.0
130	140	PE	DEVELOP RESEARCH INSTRUMNTS		02MAY79	5.0	.0	26.0 04/25/79	31.0 05/02/79	51.0 05/31/79	56.0 06/08/79	25.0	.0	.0
140	260	PE	PRINT ALL INSTRUMENTS		07MAY79	5.0	.0	31.0 05/02/79	36.0 05/09/79	56.0 06/08/79	61.0 06/15/79	25.0	25.0	.0
150	160	SB	GENERATE MAILING LIST		23APR79	5.0	.0	21.0 04/18/79	26.0 04/25/79	21.0 04/18/79	26.0 04/25/79	.0	.0	.0

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112

113

150	170	SB	DESIGN BROCHURE	23APR79	5.0	.0	21.0 04/18/79	26.0 04/25/79	21.0 04/18/79	26.0 04/25/79	.0	.0	.0	D
160	180	SB	MAIL LETTERS TO KEY PEOPLE	30APR79	5.0	.0	26.0 04/25/79	31.0 05/02/79	26.0 04/25/79	31.0 05/02/79	.0	.0	.0	D
170	180	SB	PRINT BROCHURE	30APR79	5.0	.0	26.0 04/25/79	31.0 05/02/79	26.0 04/25/79	31.0 05/02/79	.0	.0	.0	D
180	210	SB	MAIL BROCHURE	14MAY79	10.0	.0	31.0 05/02/79	41.0 05/16/79	31.0 05/02/79	41.0 05/16/79	.0	.0	.0	D
190	200	SB	ORDER EQUIPMENT	09MAY79	15.0	.0	21.0 04/18/79	36.0 05/09/79	41.0 05/16/79	56.0 06/08/79	20.0	.0	.0	D
200	230	PE	CHECK IN AND TEST EQUIPMENT	16MAY79	5.0	.0	36.0 05/09/79	41.0 05/16/79	56.0 06/08/79	61.0 06/15/79	20.0	5.0	.0	D
210	220	SB	CONDUCT TELEPHONE FOLLOW UP	04JUN79	15.0	.0	41.0 05/16/79	56.0 06/08/79	46.0 05/23/79	61.0 06/15/79	5.0	.0	.0	D
210	230	SB	CONFIRM REGIONAL COORDS.	21MAY79	5.0	.0	41.0 05/16/79	46.0 05/23/79	56.0 06/08/79	61.0 06/15/79	15.0	.0	.0	D
210	260	SB	PROCESS APPLICATIONS	11JUN79	20.0	.0	41.0 05/16/79	61.0 06/15/79	41.0 05/16/79	61.0 06/15/79	.0	.0	.0	D
220	260		DUMMY			.0	56.0 06/08/79	56.0 06/08/79	61.0 06/15/79	61.0 06/15/79	5.0	5.0	.0	D
230	240	PE	MAIL EQUIPMENT TO REGIONS	30MAY79	10.0	.0	46.0 05/23/79	56.0 06/08/79	65.0 06/21/79	75.0 07/05/79	19.0	.0	.0	D
230	260		DUMMY			.0	46.0 05/23/79	46.0 05/23/79	61.0 06/15/79	61.0 06/15/79	15.0	15.0	.0	D
240	265	PE	TEST EQUIPMENT IN FIELD	06JUN79	5.0	.0	56.0 06/08/79	61.0 06/15/79	75.0 07/05/79	80.0 07/12/79	19.0	9.0	.0	D
260	265	SB	MAIL ALL MATERIALS TO COORD	22JUN79	9.0	.0	61.0 06/15/79	70.0 06/28/79	71.0 06/29/79	80.0 07/12/79	10.0	.0	.0	D
260	270	SB	MAIL BACKGROUND DATA FORMS	18JUN79	10.0	.0	61.0 06/15/79	71.0 06/29/79	61.0 06/15/79	71.0 06/29/79	.0	.0	.0	D
265	280	CO	TRAIN REGIONAL COORDINATORS	29JUN79	1.0	.0	70.0 06/28/79	71.0 06/29/79	80.0 07/12/79	81.0 07/13/79	10.0	10.0	.0	D
270	280	PE	RECEIVE DATA FORMS BACK	02JUL79	10.0	.0	71.0 06/29/79	81.0 07/13/79	71.0 06/29/79	81.0 07/13/79	.0	.0	.0	D
280	290	CO	TRAIN PARTICIPANTS NO. 1	20JUL79	5.0	.0	71.0 07/13/79	86.0 07/20/79	81.0 07/13/79	86.0 07/20/79	.0	.0	.0	D
290	300	CO	TRAIN PARTICIPANTS NO. 2	27JUL79	5.0	.0	86.0 07/20/79	91.0 07/27/79	86.0 07/20/79	91.0 07/27/79	.0	.0	.0	D
300	310	CO	TRAIN PARTICIPANTS NO.3	03AUG79	5.0	.0	91.0 07/27/79	96.0 08/03/79	91.0 07/27/79	96.0 08/03/79	.0	.0	.0	D
310	320	PE	COLLECT RESEARCH DATA	06AUG79	1.0	.0	96.0 08/03/79	97.0 08/06/79	98.0 08/07/79	99.0 08/08/79	2.0	.0	.0	D
310	340	PE	COLLECT TC EQUIPMENT	17AUG79	10.0	.0	96.0 08/03/79	106.0 08/17/79	104.0 08/15/79	114.0 08/29/79	8.0	.0	.0	D
310	350	PE	RUN TELEPHONE EVALUATION	22AUG79	13.0	.0	96.0 08/03/79	109.0 08/22/79	96.0 08/03/79	109.0 08/22/79	.0	.0	.0	D
320	330	PE	ANALYZE RESEARCH DATA	20AUG79	10.0	.0	97.0 08/06/79	107.0 08/20/79	99.0 08/08/79	109.0 08/22/79	2.0	.0	.0	D
330	360	PE	WRITE RESEARCH REPORT	27AUG79	5.0	.0	107.0 08/20/79	112.0 08/27/79	109.0 08/22/79	114.0 08/29/79	2.0	2.0	.0	D
340	360		DUMMY			.0	106.0 08/17/79	106.0 08/17/79	114.0 08/29/79	114.0 08/29/79	8.0	8.0	.0	D
350	360	PE	ANALYZE PHONE DATA	29AUG79	5.0	.0	109.0 08/22/79	114.0 08/29/79	109.0 08/22/79	114.0 08/29/79	.0	.0	.0	D
360	370	CO	WRITE FINAL REPORT	12SEP79	10.0	.0	114.0 08/29/79	124.0 09/13/79	114.0 08/29/79	124.0 09/13/79	.0	.0	.0	D
370	380	SB	DUPLIATE FINAL REPORT	19SEP79	5.0	.0	124.0 09/13/79	129.0 09/20/79	124.0 09/13/79	129.0 09/20/79	.0	.0	.0	D
380	400	SB	DISSEMINATE FINAL REPORT	26SEP79	5.0	.0	129.0 09/20/79	134.0 09/27/79	129.0 09/20/79	134.0 09/27/79	.0	.0	.0	D

APPENDIX D

Regional Program Facilitators
and Hosting Institutions

REHABILITATION DEPARTMENT/
TELECOMMUNICATIONS TECHNOLOGY

Seattle University

SEATTLE, WASHINGTON 98122
TELEPHONE (206) 626-5794

March 5, 1979

TO: Regional Program Directors
Rehabilitation Services Administration

FROM: Susanne M. Bruyere, Ph.D.
Director - Telecommunications Project

The Department of Rehabilitation at Seattle University has been awarded a national short-term training grant for FY 1979-80. The purpose of this project is to design and conduct a training program for trainers of rehabilitation personnel on "The Use of Telecommunications Technology in the Training of Rehabilitation Personnel". I am writing to you to apprise you of the nature of this training and to seek your assistance in assuring that this training program will best meet the needs of trainers of rehabilitation personnel within each RSA region.

This training program will provide information on: telecommunications technologies available; comparisons of their cost, availability, advantages and disadvantages; and how to set up a tele-conference network within a region to facilitate the efficient and cost-effective distribution of information and continuing education to rehabilitation personnel. I believe this training has information of significant value to the many professionals involved in the training of rehabilitation personnel: staff of regional rehabilitation continuing education programs, rehabilitation research and training centers, (faculty of) rehabilitation counselor education programs, state VR agency staff development personnel, and trainers of rehabilitation facility personnel. Combined with others who might also be interested in becoming informed on this training content (RSA regional office personnel, state VR agency administration, staff of rehabilitation hospital settings, etc.), this represents a large number of potential training program participants. So that a significant number of interested rehabilitation personnel trainers, in each region, will be able to attend this training program, it will be offered in a minimum of one location in each RSA federal region. This will be accomplished by offering the training in three four-hour modules via teleconference.

This approach affords an opportunity for four to five times the number of persons to participate, than a conventional training approach would allow, using the same monies. In addition to reaching more participants by delivering the training remotely via teleconference, two additional benefits are accrued:

- participants are afforded the opportunity to personally experience the efficacy of such an approach to training; and
- participants are clustered together regionally, encouraging immediate discussion and brainstorming around possible follow-up uses of the approaches presented in future training efforts being planned within each individual region.

It is my belief that this training is timely, providing those in rehabilitation continuing education and administration information on expeditious and cost-effective ways to deliver training and enhance communication within the rehabilitation community. Specifically, I am requesting RSA regional office assistance to identify:

- potential participants from those involved in rehabilitation personnel training within your region;

- a potential training site (city and facility), located where a large number of potential participants cluster geographically, and where there would be access to a training/conference room for approximately 15 people and access to an FTS-line where possible;

- a local program coordinator who will be provided with information on how to structure and conduct the on-site (regional activities) related to a tele-conferenced training program.

I am eager to have this training program meet the information needs of those interested in each region. Any assistance you can provide in locating a training site for your region will be greatly appreciated. This written request will be followed by a telephone call to each RSA Regional Office the week of March 12. I thank you, in advance for your attention to my request.

enclosure: tentative schedules & locations

cc: RSA Regional Training Specialists
Hal Shay
Directors, RRCEP's
Directors of Training, R & T's.

REGIONAL FACILITATORS - REHABILITATION TELECONFERENCE

Region	Facilitator
I	BOSTON, MASSACHUSETTS John Driscoll Office of Rehabilitation Services HEW, John F. Kennedy Building Government Center Boston, MA 02203 617/223-6825 Jack Moline Susan Rotunda RRCEP I, Assumption College 500 Salisbury Street Worchester, MA 01609 617/755-0677
II	NEW YORK, NEW YORK Dr. Lilly Bruck In-Touch Networks 322 W. 48th Street New York, NY 10036 212/586-5588 Angela Murphy Amy Tomashevsky New York Telephone Company 1095 Ave. of the Americas New York, New York 10036 212/395-7448 212/394-3118
III	WASHINGTON, D.C. Lita Colligan Acting Director of Telecommunications Policy/HEW Rm. 403, 200 Independence Ave., S.W. Washington, D.C. 20201 202/245-1891 Delores Watkins RSA/OHD/HEW 330 C Street, S.W. Washington, D.C. 20201 202/245-8351 PHILADELPHIA, PENNSYLVANNIA & FISHERVILLE, VIRGINIA William Morgan RSA/HEW 3535 Market St., P.O. Box 13716 Philadelphia, Pa. 19101 215/596-1327
III	PHILADELPHIA & FISHERVILLE Roberta Sadler Director, Research Utilization Laboratory Laura Edwards Training Services Coordinator RRCEP Woodrow Wilson Rehabilitation Center Fisherville, Virgina 22939 703/885-9840
IV	ATLANTA, GEORGIA Martha Carrick RSA/HEW 101 Marietta St., N.W. #903 Atlanta, Georgia 30323 404/221-2352
IV	LEXINGTON, KENTUCKY Bill Emener, Jr., Ph.D. Associate Professor & Director Graduate Program in Rehabilitation Counseling College of Education, Ed. Psych. & Counseling 251 Dickey Hall University of Kentucky Lexington, KY 40506 606/257-1845
V	MINNEAPOLIS, MINNESOTA Jim Boyd Region V Center for Continuing Education 123 East Grant Street Wesley Temple Building, Rm. 503 Minneapolis, MN 55403 612/871-5646
V	MADISON, WISCONSIN Peter Martino Media Specialist Mental Retardation R&T Center Waisman Center 1500 Highland Avenue Madison, WI 53706 608/263-5837

Region	Facilitator
V	CHICAGO, ILLINOIS Miriam Walker RSA/HEW 300 South Wacker Dr., 15th Flr. Chicago, IL 60606 312/353-0628
V	EAST LANSING, MICHIGAN John Victory Media Specialist Bureau of Rehabilitation State Department of Education P.O. Box 30010 Lansing, Michigan 48909 517/373-8595
VI	DALLAS, TEXAS Ken Miner Assistant Director Regional Facilities Training Porgram Center for Rehabilitation Studies School of Community Services NT Box 13438 North Texas State University Denton, Texas 76203 817/788-2218
VI	HOT SPRINGS, ARKANSAS Laurie Wallace Arkansas Rehabilitation Continuing Education Program Arkansas Rehabilitation R&T Center University of Arkansas Hot Springs Rehabilitation Center P.O. Box 1358 Hot Springs, ARK 71901
VI	HOUSTON, TEXAS Charles R. Poor, M.A. Director of Training Quentin Smith Education & Training Coordinator Baylor College of Medicine Medical Rehabilitation R&T Center 1333 Moursund Avenue Houston, TX 77030 713/797-1440
VII	KANSAS CITY, MISSOURI Jerry Elliott Staff Development Officer Division of Rehabilitation Services Dept. of Education 233 S. 10th Street Lincoln, Nebraska 68508 402/471-2961
VIII	SALT LAKE CITY, UTAH Morris Hansen Staff Development Officer Division of Rehabilitation Utah State Board of Edcuation 250 East Fifth South Salt Lake City, UT 84111 801/533-5991
VIII	DENVER, COLORADO Vincent Scalia, Ed.D. Director, Region VIII Rehabilitation Continuing Education Program School of Special Education & Rehabilitation McKee Hall 41 University of Northern Colorado Greeley, Colorado 80639

Region	Facilitator
IX	LOS ANGELES & SAN DIEGO, CALIF. Bob Brockman RRCEP IX San Diego State University Rehabilitation Center 6363 Alvardo Court San Diego, CA 92120 714/286-1510 Sara Gammon Training Coordinator Casa Colina Hospital 255 East Bonita Pomona, CA 91767
IX	SAN FRANCISCO, CALIF. Roger Parker, Director Instructional Media Center Cal State - Hayward AD 959 Hayward, CA 94542 415/881-3693
X	SEATTLE, WASHINGTON Susanne M. Bruyere, Ph.D. Director Anne Chambers Training Program Coordinator Telecommunications Project Department of Rehabilitation Seattle University Seattle, WA 98122
X	ANCHORAGE, ALASKA Kathe Parker Assistant Chief of Rehabilitation Services Department of Education Division of Vocational Rehabilitation State of Alaska 4100 Spenard Road Anchorage, Alaska 99503 907/243-5600
Pacific	HONOLULU, HAWAII Mary Kessler Project Coordinator Peggy Murphy-Hazzard Educational Specialist Rehabilitation Facility Training Univeristy of Hawaii at Manoa Educational Psychology Wist Hall Annex 2, Rm. 121 1776 University Avenue Honolulu, Hawaii 96822 808/948-7501

HOSTING INSTITUTIONS - REHABILITATION TELECONFERENCE

Region	Hosting Institution
I	BOSTON, MASSACHUSETTS Federal Post Office & Court House Bldg. Post Office Square
II	NEW YORK, NEW YORK New York Telephone Company 1095 Ave. of the Americas
III	WASHINGTON, D.C. RSA/HEW Switzer Building 330 "C" St., S.W.
III	PHILADELPHIA, PENNSYLVANNIA & FISHERVILLE, VIRGINIA RSA/HEW 3535 Market St., P. O. Box 13716 Philadelphia, Pa. 19101 Woodrow Wilson Rehabilitation Center Fisherville, Virginia 22939
IV	ATLANTA, GEORGIA RSA/HEW 101 Marietta St., N.W. #903
IV	LEXINGTON, KENTUCKY University of Kentucky Student Services Center
V	MINNEAPOLIS, MINNESOTA Region V Center for Continuing Education Wesley Temple Building 123 East Grant St.
V	MADISON, WISCONSIN University of Wisconsin/Extension Studio A/Old Radio Hall 975 Observatory Drive
V	EAST LANSING, MICHIGAN University Center for International Rehabilitation Michigan State University West Fee Hall
V	CHICAGO, ILLINOIS RSA/HEW 300 South Wacker Dr.
VI	DALLAS, TEXAS University of Texas-Dallas
VI	HOT SPRINGS, ARKANSAS Hot Springs REhabilitation Center
VI	HOUSTON, TEXAS Baylor Colelge of Medicine Medical Rehabilitation R&T Center 1333 Moursund Avenue
VII	KANSAS CITY, MISSOURI RSA/HEW 601 East 12th Street
VIII	SALT LAKE CITY, UTAH Division of Rehabilitation Services South Salt Lake City Office 5138 South State Street Murray, Utah 84107
VIII	DENVER, COLORADO RSA/HEW Federal Office Building 1901 Stout St.
IX	LOS ANGELES & SAN DIEGO Casa Colina Hospital 255 East Bonita Pomona, Calif. RRCEP IX San Diego State University Rehabilitation Center 6363 Alvarado Court San Diego, Calif.

Region	Facilitator
IX	SAN FRANCISCO, CALIF. Cal-State/Hayward Instructional Media Center Hayward, California
X	SEATTLE, WASHINGTON Rehabilitation Department Seattle University Campion Tower 914 East Jefferson
X	RSA/HEW Arcade Building 1321 - 2nd Ave.
X	ANCHORAGE, ALASKA Anchorage Community College Student Activities
Pacific	HONOLULU, HAWAII The Alexander 1505 Alexander, Apt. 406 Honolulu, Hawaii 96822 808/947-7157 (Residence of Mary Kessler)

APPENDIX E

Selected Training Materials of Regional Program Facilitators

Program Announcement

TeleTraining for Rehabilitation Personnel

MEET-ME Teleconference

TO: On-site Coordinators
FROM: Susanne Bruyere and Lorne Parker
DATE: June 4, 1979

PROGRAM TITLE: Telecommunications in the Training of Rehabilitation Personnel

MODERATORS: Susanne Bruyere, Seattle University; Lorne Parker, University of Wisconsin-Extension

DATES: Coordinators' Training Session - July 16, 1979
Training Programs (all participants) - July 20, 27, August 3, 1979

TIMES: Coordinators' Training Session - 2pm - 3pm Central Standard Time
Training Programs (all participants) - 12pm-4pm Central Standard Time

INSTRUCTORS: Susanne Bruyere (Seattle University)
Lorne Parker, Marcia Baird, Mavis Monson (University of Wisconsin-Extension)

CLIENTELE: Trainers of rehabilitation personnel and agency administrators

PROGRAM DESCRIPTION: Rehabilitation personnel will be participating in this teleconference from 20 different locations nationwide. This training program offers information which will assist the participants in making informed decisions regarding the use of telecommunications technology in staff development efforts. Specifically, the curriculum in the three half-day sessions will cover the following:

Session I (July 20): Telecommunications and Rehabilitation-An Overview

Technology available, costs, advantages, disadvantages, and examples of current applications.

Session II (July 27): Using Telecommunications in Training Today

How to assess equipment needs, set up a system, assess costs, identify locations and appropriate presenters.

Session III (August 3): Tele-techniques

How to design and conduct training programs which can effectively be delivered using telecommunications technology

TELECONFERENCING EQUIPMENT: A special amplified telephone device called a Darome Convener is being sent to each location by the Darome Company. They should arrive by July 9, 1979. Instructions will accompany the equipment. It is important that you select a conference room that has a standard, single line telephone (not an office phone with several lines) with a modular wall jack. The room should be suitable for conferences for as many people as anticipated at each location.

AUDIOVISUAL EQUIPMENT:

A slide projector will be needed with a slide tray. An AC outlet suitable for use with the slide projector will be necessary. Slides will be sent to each location, and referred to during the teleconference.

TELECONFERENCING EQUIPMENT CHECK:

A telephone equipment check will take place at each location between 9:00 am and 3pm during the week of July 9-13. Specific times for check outs will be prearranged with each local coordinator to make sure that all equipment has been installed and operates properly. Local coordinators will be contacted before July 6th to arrange check out times and procedures.

All of the 20 teleconferencing sites will be bridged together on July 16th at 2pm Central Standard Time for a combination system check out and coordinators' training session.

If you have any questions regarding technical aspects of this teleconference, please do not hesitate to call Lorne Parker at (608) 262-4342.

Program Checklist ✓

REGIONAL FACILITATORS' ORIENTATION SESSION MONDAY, JULY 16th _____

_____ 1. Hook up and test the teleconferencing station equipment 1/2 hour before the session is scheduled to begin.

_____ 2. Make sure you have all of the materials required for this session. (Facilitator's Manual, one participant portfolio)

_____ 3. 20 minutes before the session is scheduled to begin, call the Meet-Me Bridge, [(608) 263-7550], to enter the teleconference.

_____ 4. Refer to the agenda on the next page.

_____ 5. Ask any questions you may have of the moderators, that's what this meeting was called for! Review other session checklists and guidelines to make sure that all procedures are clear to you.

_____ 6. Make sure the teleconferencing equipment is stored in a secure place when not in use.

AGENDA

SESSION DATE: MONDAY 7/16

START: 2PM CDT

END: 3PM CDT

TITLE: REGIONAL FACILITATOR'S ORIENTATION SESSION

MODERATORS: SUSANNE BRUYERE AND LORNE PARKER

SPEAKERS: SAME AS ABOVE

Agenda Item	Person/Format	Approx. Time	Notes
Sign-On, Welcome, Roll Call	Bruyere	10 min.	
Review of dates and times	Bruyere	5 min.	
General Procedures (room set-up, calling the bridge, etc.)	Parker	10 min.	
Review of the Facilitators' Manual	Parker	10 min.	
QUESTION AND ANSWER PERIOD	Parker, Bruyere	25 min.	

Program Checklist ✓

SESSION I FRIDAY, JULY 20th _____

_____ 1. Open the conference room at least 1/2 hour before the session is scheduled to begin. If needed, provide signs around the building regarding room location.

_____ 2. Hook up and turn on the teleconferencing station equipment.

_____ 3. Test slides in the slide projector before the participants arrive.

_____ 4. Welcome participants as they arrive. Hand out name tags, print materials, describe facility creature comforts,etc. .

_____ 5. Refer to the "Off-Air Guidelines" on the next page.

_____ 6. When the on-air portion of the program begins, adjust the volume on the convenor if needed. Advance slides as directed by the program moderators.

_____ 7. Remind participants to identify themselves by name and location every time they speak over the network.

_____ 8. When the break time is introduced by the program moderators, remind the participants that they have only 15 minutes and that the program will resume promptly.

_____ 9. After the on-air portion of the program has concluded, refer to the POST-TELECONFERENCE off-air guidelines on the next page.

Off-Air Guidelines/session I

PRE-TELECONFERENCE

1. Make sure all of the people at your location sign the "sign-in sheet" for this session.

2. All participants should receive a portfolio containing the print materials which will be used for all three sessions. Please encourage participants to bring these materials with them to each session.

3. Please administer the "Pre-program Survey" according to the instructions which accompany that survey. Fill out one of the surveys yourself.

4. Remember to call the "Meet-Me Bridge" about 20 minutes before the on-air portion of the program begins. Call (608) 263-7550. (Consider having someone at your location assist you by making this call.)

POST-TELECONFERENCE

1. Please ask all participants to complete the "Feedback Form" located in their participant handbook. Extra forms were also provided to each region.

2. Discuss the assignment for next week: List some of the possible training uses of teleconferencing in your region. Brainstorm as many applications as possible, continue this activity next Friday as a group.

3. Also, discuss making contacts with regional resource people in telecommunications to have them come and address the group at the close of the final session.

Program Checklist ✓

SESSION II FRIDAY, JULY 27th _____

_____ 1. Open the teleconference room at least 1/2 hour before the session begins.

_____ 2. Hook up and turn on teleconference station equipment.

_____ 3. Test the slides for this session in the the slide projector before the participants arrive.

_____ 4. Welcome the participants as they arrive.

_____ 5. At _____, call the training session to order.

_____ 6. Refer to the off-air guielines on the next page.

_____ 7. The on-aor portiсn of the program will begin at _____. Be ready to project slides as needed by the teleconference moderators. Remind participants to identify themselves whenever they speak over the lines.

_____ 8. Approximately 2/3 of the way through the program the moderators will call for splitting the teleconference into 4 separate mini-networks for the purpose of discussing the case studies. If you are to be a case study leader you will receive instructions on a separate sheet describing your role, etc.

_____ 9. After the mini-network case studies have concluded, refer to the off-air guidelines on the following page.

Off-Air Guidelines/session II

PRE-TELECONFERENCE

1. Make sure all of the people who are at your location sign the "sign-in sheet" for this session.

2. Jot down any suggestions from the group regarding possible applications of teleconferencing in your region. Be ready to present some of the suggestions to the large group.

3. Also make note of any questions or difficulties the group would like to have addressed during the on-air portion of the program today.

4. Don't forget to call the "Meet-Me Bridge" about 20 minutes before the on-air portion of the program is scheduled to begin. Call (608) 263-7550.

5. Review the agenda for today's session and explain how the case study portion of the program will operate.

POST-TELECONFERENCE

1. Conduct any further discussion required regarding the case study process.

2. Review the agenda for Session III.

3. Finalize choices regarding who the regional resource people will be that will be called in as consultants during the final portion of session III. Make arrangements for contacting these resource people.

Program Checklist ✓

SESSION III FRIDAY AUGUST 3rd, _____

_____ 1. Open the teleconference room 1/2 hr. before the session begins.

_____ 2. Hook up and turn on the teleconferencing equipment.

_____ 3. Test the slides for this session in the slide projector before participants arrive.

_____ 4. Welcome the participants.

_____ 5. At _____, call the session to order.

_____ 6. Refer to the off-air guidelines on the next page.

_____ 7. The on-air portion of the program will begin at _____. Be ready to project any slides needed for this session.

_____ 8. When the break occurs, remind people that the session will resume promptly in 15 minutes.

_____ 9. Refer to the off-air guidelines on the next page at the close of the on-air portion.

Off-Air Guidelines/session III

PRE-TELECONFERENCE

1. Please have every person in the room sign the "sign-in sheet" provided for this session.

2. Finalize any remaining comments regarding the case study reports from your region.

3. If your regional telecommunications resource person is in attendance at this point, introduce that person (or people) to the other participants at your location.

4. Remember to call the "Meet-Me Bridge" about 20 minutes before the on-air portion of the program is scheduled to begin.

POST-TELECONFERENCE

1. Spend approximately 1/2 hour discussing possible regional activities with your regional telecommunications resource person.

2. Formulate a plan for the next step:

   a.) What do you plan to pursue as a group, or individually?

   b.) What activities will have to be accomplished to meet that goal?

   c.) Who will be responsible for each activity?

   d.) Does the group desire assistance with a follow-up teleconference?

   As regional facilitator you should summarize the above discussion and send copies to each of the participants, and to Lorne Parker, U.W.-Extension, 975 Observatory Drive, Madison, WI 53706.

3. Please be certain that each participant completes a "Post-Program Survey". Collect those surveys immediately from the group and send them to the address printed on the form itself.

Region_____

Regional Program
Facilitator_____

TELECOMMUNICATIONS TRAINING
Session III - August 3, 1979

Regional Training Efforts: A Plan to Explore More Cost Effective Approaches Using Telecommunications Technology

A. What are some of the training priorities or policy-building tasks that this Region will be facing in the coming year? (List and prioritize in order of importance.)

B. Which of these might be accomplished more cost-effectively and/or in a more timely manner by the use of telecommunications technology?

C. What plans does the Region/local group have to pursue the use of teleconferencing to assist them in meeting some of their training or policy-building tasks for this coming year?

D. Regional Plan to explore the use of teleconferencing in Rehab Training.

1. Who will be involved in this effort?

D. cont.

2. What activities and deadline dates will each assume?

ACTIVITIES	TO BE COMPLETED

E. Would assistance through a follow-up teleconference be helpful(i.e., use of the free hour of bridge time to tie in participants for a follow-up)?

G. Please list the Resources in telecommunications brought in to address the group at the end of Session III:

PLEASE RETURN THIS PLAN AFTER SESSION III TO:

Susanne M. Bruyere, Ph.D.
Rehab/Telecommunications Technology
Seattle University
Seattle WA 98122

APPENDIX F

Participant Outreach Materials

REHABILITATION DEPARTMENT/
TELECOMMUNICATIONS TECHNOLOGY

Seattle University

SEATTLE, WASHINGTON 98122
TELEPHONE (206) 626-5794

April 9, 1979

TO: Trainers of Rehabilitation Personnel & Rehabilitation Administrators

FROM: Susanne M. Bruyere, Ph.D., Director
Telecommunications Technology Project S.M.B.

RE: TELECOMMUNICATIONS IN REHABILITATION PERSONNEL TRAINING

Trainers of rehabilitation personnel and administrators of rehabilitation programs are faced with a somewhat similar dilemma. The dawning of a new era of rehabilitation legislation heightens the need for increased communication between policy makers at federal, state and local levels. The knowledge explosion in the various medical and technical areas related to severe disabilities challenges rehabilitation staff trainers to update curriculums and provide continuing education at an increasing rate. Both of these challenges emerge at a time when resources spent in travel to meetings which facilitate information sharing are increasingly less available.

The need for increased communication and opportunities for continuing education will continue to grow and we must, therefore, simultaneously look for alternative ways to meet these needs. Telecommunications technology offers alternatives for cost effective and expeditious ways to approach some of these problems. The national short-term training program on "The Use of Telecommunications Technology in Training" is designed to assist rehabilitation personnel and agency administrators to make informed decisions regarding the use of telecommunications technology.

To reach as many interested individuals as possible, this training will be offered simultaneously via tele-conference in a minimum of one location in each federal region. This approach has two distinct advantages:

- -participants are afforded the opportunity to experience for themselves the efficacy of telecommunications in training; and
- -participants are clustered regionally to facilitate immediate brainstorming around possible follow-up uses of the approaches presented for future efforts within each region.

Enclosed you will find a set of brochures which provides further information on specific dates and locations for this training in each region and application procedures. Please share these with appropriate personnel and administrators of rehabilitation agencies. The training will be made available to interested others at each location on a space available basis.

You are encouraged to send your application in as early as possible. Don't miss an opportunity to participate in this unique training program to both learn about and experience the potential of telecommunications as a tool in rehabilitation staff training.

Enclosure: brochures

TELECOMMUNICATIONS TECHNOLOGY TRAINING

FOR REHABILITATION

Presented by the
Rehabilitation Department
Seattle University
Seattle, Washington

RSA Grant 45-P-81379/0-01
Short Term Training Program

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Telecommunications Technology
Seattle University
Rehabilitation Department
Seattle, WA 98122

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TELECOMMUNICATIONS TECHNOLOGY
SEATTLE UNIVERSITY
REHABILITATION DEPARTMENT
SEATTLE, WA 98122

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TELECOMMUNICATIONS TECHNOLOGY can be used in REHABILITATION to:

- reach, geographically more trainees;
- increase access to printed and audio-visual materials;
- coordinate regional training;
- increase interaction with consultants;
- present conferences in different locations, simultaneously.

Training will be presented via TELECOMMUNICATIONS and is specifically designed for REHABILITATION trainers and administrators to assist in making decisions regarding using TELECOMMUNICATIONS in staff development.

Training will be cost free to participants (travel and per diem not provided). Academic credit available. Participants are encouraged to attend all sessions.

Logo and Brochure: LOGOSPEL

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Training will be presented in 19 regional locations (see application) as follows:

July 20, 1979
1:00-5:00 pm*
"Telecommunications and Rehabilitation"
Technology available, cost, advantages, disadvantages and examples of current applications.

July 27, 1979
1:00-5:00 pm*
"Using Telecommunications in Training"
How to assess equipment needs, set up a system, assess costs, identify locations and appropriate presenters.

August 3, 1979
1:00-5:00 pm*
"Teletechniques"
How to design and conduct training programs which can effectively be delivered using telecommunications technology.

* Eastern Daylight Time
(time in other zones will be announced)

Complete the attached application and return before **May 31, 1979.** Details will be mailed to all applicants.

Susanne Bruyère, Ph.D.
Telecommunications Technology
Rehabilitation Department
Seattle University
Seattle, WA 98122
(206) 626-5794

TELECOMMUNICATIONS TECHNOLOGY TRAINING PROGRAM

Name_____ Position/Affiliation_____

Address_____

City/State_____ Phone_____

Nearest Location to Applicant:

___Boston, MA
___New York, NY
___Philadelphia, PA
___Washington, D.C.
___Lexington, KY
___Atlanta, GA
___Minneapolis, MN
___Chicago, IL
___Dallas, TX
___Hot Springs, AR
___Kansas City, MO
___Madison, WI
___Salt Lake City, UT
___Denver, CO
___San Francisco, CA
___Los Angeles, CA
___Seattle, WA
___Honolulu, HI
___Anchorage, AK

___I am interested in academic credit

I will need this Service(s):

___Interpreters
___Braille (or)
___Taped Material
___Other:_____
_____
_____
_____

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REHABILITATION DEPARTMENT/
TELECOMMUNICATIONS TECHNOLOGY

Seattle University

SEATTLE, WASHINGTON 98122
TELEPHONE (206) 626-5794

July 6, 1979

To: Participants, National Short Term
Training on Telecommunications

From: Susanne M. Bruyere, Ph.D.
Project Director

We are most pleased to have you join us for the upcoming training program on the use of telecommunications technology in rehabilitation. This program has been designed to provide a unique experience for participants. Not only will you learn about existing and futuristic uses of telecommunications in continuing education, the delivery of client services, and agency administration, but be active participants in such an experience. The training will be presented simultaneously via teleconference to 21 locations nationally (including Alaska and Hawii), providing you an opportunity to evaluate first hand the training alternatives provided by telecommunications. At the local level the workshop is structured to offer a meeting ground for those in human services and telecommunications, so that those who might be interested in pursuing future efforts in telecommunications will be put in touch with others with similar interests.

This program will be held in three consecutive Friday sessions, July 20, 27, and August 3, from _____ to _____.
The training has been designed to provide information in a sequential approach; that is, each session will build upon the presentation in the preceding session. You are therefore strongly encouraged to attend all sessions. The time in between each session has been built in to allow an opportunity for you to discuss the concepts presented with members of your staff, and to bring questions or concerns to subsequent sessions, so that they may be addressed by those with expertise in telecommunications.

This training program will be held at the following location:

_____ A map/directions has been enclosed for your convenience.

_____ Your Regional Program Facilitator will be contacting you in the near future to provide you with further information.

_____ Please call your Regional Program Facilitator if you need assistance in locating the above site.

The Regional Program Facilitator(s) for this training at your location is(are):

This person(s) has generously agreed to assist us to bring this training program to your region. Please contact them if you have any questions about overnight accomodations and parking, or concerns regarding any special services you will require.* Since some of you will be attending this training through the lunch hour, I suggest that you either bring a lunch with you or eat prior to the session. (There will be no lunch break during the training).

A detailed agenda will be provided with training materials at the first session; in brief, program content will be as follows:

Session I (July 20) TELECOMMUNICATIONS AND REHABILITATION: AN OVERVIEW

A. Past, present and projected efforts using telecommunications in rehabilitation (Presentations by Lita Colligan, RSA Telecommunicaitons Coordinator; Paul Bowerman, Oklahoma State VR Agency; Ruth Katz, Denver Research Institute; John Boor, University of Washington)

B. Telecommunication systems and applications

Session II (July 27) USING TELECOMMUNICATIONS IN TRAINING TODAY

A. Background on teleconferencing

B. Effectiveness and student satisfaction

C. Setting up a system

Session III (August 3) TELETECHNIQUES

A. The "whys" of instructional design

B. Interactive techniques

C. Instructional strategies

D. Evaluating distant learning experiences

E. Future implications of telecommunications for continuing education in human services
(Guest panel of representatives from the Institute for Handicapped Research, the Public Services Satellite Consortium, and the National Advisory Council on Extension and Continuing Education)

Preparation for Training

Since you have made a commitment to expend your resources and time to join us for this training, I am eager that you come away with information which will have the most meaning for you within your organizational context. I encourage you to spend some time thinking about some of the current problems which you might be facing in providing training to rehabilitation professioanls or attempting to communicate within the rehabilitation community. You will be asked during the training to bring in some thoughts about how the techniques which you will be presented with could apply to your program. You may want to involve other staff members in thinking about these issues.

*Travel costs and per diem are the responsibility of the participant; costs for special services (e.g. interpreters etc.) will be reimbursed by Seattle University

I am confident that this is a most timely learning experience for all of us. Administrators of human services programs are being challenged more than ever to find innovative ways to meet the continuing education needs of their staff. The knowledge explosion in all aspects of medical and technical areas demands the rapid dissemination and communication of new information. Yet, fuel shortages, limited time and travel funds make traditional approaches costly, if not inaccessible. This training is designed to assist you to begin to be able to make informed decisions about effective alternatives to costly meetings and training approaches. I look forward to having you share your ideas and expertise with us during this training program.

cc: Regional Program Facilitators
RSA Regional Training Specialists
Directors, RRCEPS
Directors of Training, RTCs

APPENDIX G

Equipment Instructions

WHAT IS MEET-ME?

Meet-Me is a two-way audio system that links groups of people in many distant locations. It has these features.

1. Meet-Me uses regular telephone lines to reach people.

2. Participants in a Meet-Me program simply dial a pre-determined number at a designated time and the Meet-Me bridge links all callers together.

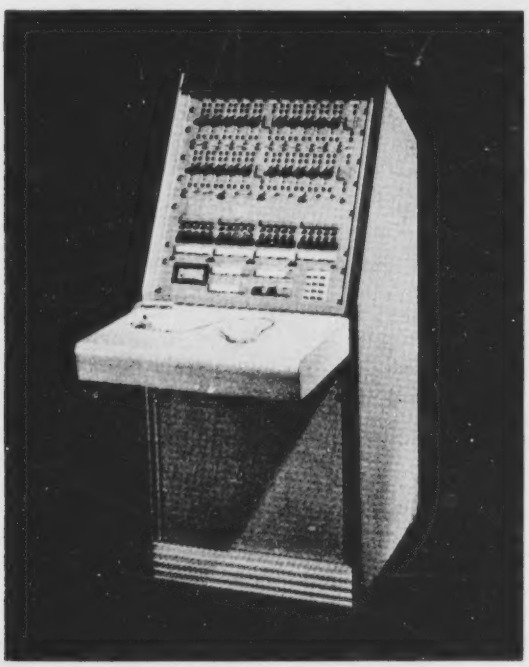
3. Meet-Me can connect up to 20 individual sites.

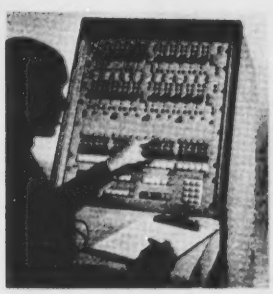
4. A portable conference speaker and microphone at each Meet-Me location allows a group of people at that site to participate in the teleconference program.

5. Anyone in the group can make comments or ask questions by simply activating the microphone and speaking. Whatever is said can be heard at all locations.

6. The Meet-Me bridge is located in Madison, Wisconsin, at Old Radio Hall, headquarters for the Center for Interactive Instructional Programs and Instructional Communications Systems.

7. A Meet-Me engineer monitors the teleconference program to control the audio quality and assist with any reception or transmission problems.





Meet-Me Bridge

MEET-ME TELECONFERENCE PROCEDURES

TELECONFERENCE EQUIPMENT

Each location will receive a Darome 610 Convener to use during the teleconference. The 610 is a portable conference speaker and microphone system that plugs into a modular telephone jack and AC outlet. A set of operating instructions will be included with each unit to tell you how to set up the Convener, place a call, and use the equipment.

WHAT IS THE TELEPHONE NUMBER FOR THE MEET-ME BRIDGE?

Dial (608) 263-7550 to be connected to the Meet-Me bridge for equipment check out and for each training program.

HOW WILL THE EQUIPMENT BE CHECKED OUT?

Teleconference equipment will be checked out prior to the training program with the help of a staff member on the bridge in Madison, WI. One week before the first training program (week of July 9th), each on-site coordinator will be asked to see that the equipment is plugged in and ready to operate according to the instructions supplied with the unit.

The regional facilitator will then place a telephone call to the Meet-Me bridge. A staff member at the bridge will answer your call and make sure you are properly connected to the bridge. Any problems in reception or operation will be cleared up at that time.

Each regional facilitator will be contacted by July 6th to arrange for the time and date of equipment checkout.

HOW WILL I BE CONNECTED TO THE PROGRAM?

On the day of the training program (July 16, 20, 27, Aug. 3) call the Meet-Me bridge number about 20 minutes before the start of the on-air session. When the operator answers your call, be ready to tell him or her your name and location (city).

The Meet-Me operator will make sure you are receiving and transmitting properly, and will connect you to the other teleconference participants.

Moderators will start the on-air portion of the training program at 2:00pm CDT on July 16, and at Noon CDT on the other days of the program (July 20, 27, Aug. 3).

WHAT IF MY SITE HAS TROUBLE RECEIVING OR TRANSMITTING?

If you have any reception or transmission problems, report the problem over the network and the Meet-Me operator will assist you. If you are unable to do this, redial the Meet-Me number from your unit or from another telephone and report the problem.

PHONE NUMBERS:

Meet-Me Operator: (608) 263-7550. If no answer, call (608) 262-4342.
Lorne Parker or Paul Edison-Swift: (608) 262-4342
Susanne Bruyere: (206) 626-5794

WLEX UNIVERSITY OF WISCONSIN–EXTENSION

RADIO HALL MADISON, WISCONSIN 53706 AREA CODE 608 262-4342

INSTRUCTIONAL COMMUNICATIONS SYSTEMS

A. HOW TO SET UP THE CONVENER:

Note: The Convener is designed to work in conjunction with a standard extension telephone which has a four-prong plug and associated wall receptacle.

1. Take the Convener out of the case and place it in a convenient location approximately ten feet from a telephone jack. There should be an electrical outlet nearby.

2. Read the information on the back of the unit.

3. Plug the Convener into an electrical outlet.

4. Remove the microphone from the case. Place the microphone so that it does not face the front of the convener.

5. Take the long grey microphone cord (10 ft. cord) out of the case. Plug one end of the cord into either jack located on the back of the microphone. Plug the other end of the cord into the "Microphone" jack on the back of the convener.

6. Hold a microphone bar down and speak into the microphone. While you are talking, turn the "PA Level" clockwise until you can hear your own voice coming from the Convener.

7. Turn the "Receive Level" control completely counter-clockwise. The control will "click" off at the end of its rotation.

8. Unplug the telephone from the four prong outlet. Plug the four prong "cube" into the wall outlet. Plug the telephone and Convener into the two four prong receptacles on the cube.

9. Turn the "Receive Volume" clockwise and you should hear a dial tone from the Convener. Turn the "Receive Level" counter-clockwise and click off to disconnect dial tone.

You are now ready to dial or receive a call.

B. TO PLACE A CALL

1. Set up the Convener as described in Section A.

2. Check the receive level control to verify that it is completely counter-clockwise and "clicked" off. Lift the receiver from your phone and listen for a dial tone, then dial.

3. After the party answers turn the receive level clockwise to approximately 12 o'clock. You should hear the called party through the Convener.

4. Hang up the telephone. Failure to hang up the phone will lower voice levels for receive and transmit.

5. To talk, press down your microphone bar and speak. When you have finished speaking, release the bar.

   Important: Do not hold the bar down when you are not speaking. If you do, any noise in your room will be heard at all the other locations.

C. TO RECEIVE A CALL

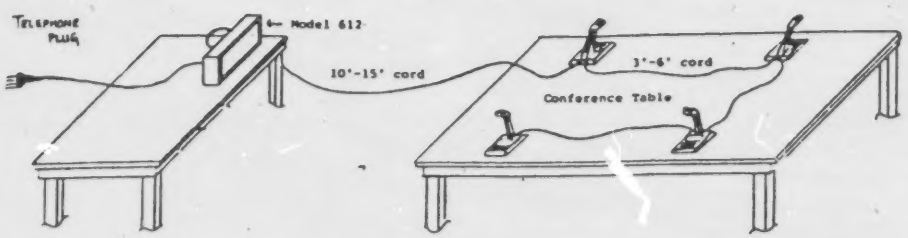
1. Before the scheduled call comes in, set up the Convener as described in Section A.

2. Then, make sure the telephone is hung up and turn the receive level completely counter-clockwise until it "clicks" off.

3. When the telephone rings, answer on the Convener by turning the receive level clockwise and pressing the microphone bar and speaking. If you cannot hear the caller, turn up the receive level on the Convener.

IF YOU HAVE ANY DIFFICULTIES WITH THIS UNIT, call the phone number you have been given for the conference. The technician at the other end can assist you. If no answer, call (608) 262-4342 and ask for a Meet-Me technician for assistance.

IDEAL ROOM SETUP



APPENDIX H

Selected Curriculum Materials

AGENDA

SESSION DATE: JULY 20,1979

START: 12 NOON,CST

END: 4PM, CST

TITLE: TELECOMMUNICATIONS & REHABILITATION:AN OVERVIEW

MODERATORS: Susanne Bruyere and Lorne Parker

SPEAKERS: Lita Colligan, Ruth Katz, Paul Bowerman, John Boor

Agenda Item	Person/Format	Approx. Time	Notes
A. Preparation (off-air)	Local Coordinators/Print Materials	30 min.	
B. Technology Overview (on-air)	Bruyere/	45 min.	
1. Background of this training	Slides		
2. The Meet-Me Teleconferencing System that we're using	Handbook		
3. Introductions around the nation			
4. Overview of objectives for the teleconference			
5. Introduction to Session I			
6. New Technology & Teleconferencing: An Overview	Slides		
C. Past, present, and projected efforts in rehabilitation using telecommunications		60 min.	
1. RSA & Telecommunications: An Overview	Lita Colligan/Handbook		
2. Rehabilitation Staff Training	Ruth Katz/Handbook		
3. Rehabilitation Services: Consumers & Telecommunications	Paul Bowerman/Handbook		
4. Satellite Use in Continuing Education	John Boor/Handbook		
BREAK		15 min.	
D. Telecommunications Systems and Applications	Parker/Slides	40 min.	
1. Systems			
2. Applications			
3. Costs			
E. Summary & Preparation for Session II	Bruyere	5 min.	
F. Wrap-up (off-air)	Local Coordinators	45 min.	
1. Discussion of Session I			
2. Plan formulation of a group list of applications to be presented at Session II			
3. Feedback form			

AGENDA

SESSION DATE: JULY 27, 1979

START: 12 NOON, CST

END: 4PM, CTS

TITLE: Using Telecommunications in Training Today

MODERATORS: Susanne Bruyere and Lorne Parker

SPEAKERS: same as above

Agenda Item	Person/Format	Approx. Time	Notes
A. Preparation (off-air) 1. Review applications generated by group 2. Discuss any questions which the group would like to bring up after sign on 3. Discuss any experience since last session	Local Coordinators	30 min.	
B. Introduction and Overview 1. Informal Roll Call 2. Summary of content from Session I 3. Overview if Session II 4. Response to questions	Bruyere	30 min.	
C. Using Telecommunications in Training Today 1. The telephone as a delivery system 2. Equipment: capabilities & costs	Parker/Slides & Handbook	30 min.	
D. Background on Teleconferencing 1. Teleconferencing Today 2. Definition of Teleconferencing Terms 3. The state of the art in teleconferencing	Parker/Slides & Handbook	15 min.	
E. Effectiveness & Student Satisfaction 1. Research studies on effectiveness 2. Studies on student satisfaction 3. Added value of teleconferencing	Parker/Slides & Handbook	15 min.	
B R E A K		15 min.	

Agenda Item	Person/Format	Approx. Time	Notes
F. Getting Started in Teleconferencing	Parker/Slides & Handbook	15 min.	
1. Three basic components of any system:			
a. Station equipment			
b. Transmission equipment			
c. Control center			
2. Examples of station equipment			
3. Transmission Systems 2-wire vs. 4-wire			
4. Switching- types of mikes			
G. How Do I Set Up A System?	Parker/Handbook	15 min.	
1. Who do I call?			
2. What are the optimum technical requirements?			
3. How much will it cost?			
H. Case Studies		45- min.	
1. Introduction	Parker		
2. Subgroups break off into mini-nets	Regional Coordinators		
3. When discussion is finished, subgroups will sign-off the mini-nets			
I. Summary & Preparation for Session III	Local Coordinators (off-air)	15-30 min.	
1. Review agenda for Session III			
2. Assignment for next session			

AGENDA

SESSION DATE: AUGUST 3, 1979

START: 12 NOON, CST

END: 4PM, CST

TITLE: Teletechniques

MODERATORS: Susanne Bruyere and Lorne Parker

SPEAKERS: same as above, plus Panel to be announced

Agenda Item	Person/Format	Approx. Time	Notes
A. Preparation (off-air)	Local Coordinators	30 min.	
1. Review & discussion of group report regarding case study in Session II			
2. Review of experiences since the last session			
B. Introduction & Overview	Bruyere	15 min.	
1. Informal Roll Call			
2. Summary of content from Session II			
3. Overview of Session III	Handbook		
C. Case Reports & Comments	Parker	30 min.	
D. Introduction to Teletechniques	Parker/Slides & Handbook	5 min.	
1. The "whys" of instructional design			
2. Reaching faculty/trainers			
E. Teletechniques-4 Design Components	Parker/Slides & Handbook	13 min.	
1. Humanizing			
2. Participation			
3. Message Style			
4. Feedback			
F. Interactive Techniques For Teleconferencing	Slides	12 min.	
G. Instructional Strategies	Parker/Handbook	10 min.	

Agenda Item	Person/Format	Approx. Time	Notes
H. Local Program Facilitators 1. Choosing sites 2. Assessing facilities 3. Using a local coordinator	Parker	10 min.	
I. An Evaluation System for Teleconferencing 1. Evaluating teleconferences, need for a unique design 2. Using a bank of questions 3. Using the telephone as a tool for implementing the evaluation 4. Making use of the results	Parker/ Handbook	10 min.	
J. Summary & Future Implications	Bruyere/ Panel Discussion	30 min.	
K. Local Presentors (off-air)	Local Coordinators	30 min	
L. Wrap-up (off-air) 1. Local discussion of viability of concepts & techniques presented, in their regional efforts 2. Formulate a plan: a. What type of activity to pursue? b. How can these goals be reached? c. Who will do each activity? d. When? e. Would assistance through a follow-up teleconference be helpful? 3. Local Coordinator summarizes above plan and sends copies to Lorne Parker and each of the local participants.	Local Coordinators	30 min.	

CHARACTERISTIC COMPARISON OF FOUR TELECOMMUNCATIONS SYSTEMS

Types	Number of Locations	Flexible Meeting	Set-up Time	Audio Quality	Visual	Motion	Personnel	Cost
*Operator	25	Yes	Varies	Varies	No	No	Operator	Low
*Meet-Me	80	Yes	Immediate	Varies	No	No	User or technician	Low
*Portable station equipment	200+	Yes	Immediate	Excellent	No	No	Technician	Usage-dependent
*Conference rooms	200+	No	Immediate	Excellent	No	No	Technician	High physical
*Dial-up	40	See sections above	See sections above	See sections above	Yes	No	See sections above	Moderate except for color slow scan
*Dedicated	200+	"	"	"	Yes	No	"	"
*Videoconference satellite, cable, microwave		Yes		Average to excellent	Yes	Yes	Technician	High

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COST CONSIDERATIONS*

*Cost considerations will vary depending on the objectives of the teleconference and the type of technical system involved.

PERSONNEL

PERSONNEL - INTENSIVE ACTIVITIES

FUNCTIONS	COSTS
Needs assessment/audience assessment/program objectives phone surveys, questionnaires advisory committees	PROGRAM COORDINATOR _____ hours @ $_____
Marketing/promotion designing and producing brochures mailings press releases	PROGRAM ENGINEER _____ hours @ $_____
Scheduling scheduling of locations and sessions	CLERICAL SUPPORT _____ hours @ $_____
Coordination coordination of presenters, facilitators, participants registration of participants or sites	
Program planning and development (see "Program-related")	
Technical support checkout of equipment control center operation quality control	
Clerical	

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PROGRAM-RELATED

PROGRAM - RELATED ACTIVITIES

Program development Defining curriculum Designing for teleconference format Decisions on revising, producing or purchasing content materials	FACULTY AND/OR INSTRUCTIONAL DESIGNER _____ hours @ $_____
Training-of-the-trainers Training of faculty and outside speakers Training for on-site facilitators	PRODUCTION SUPPORT _____ hours @ $ _____
Program production Duplication of workbooks, handouts, slides and other visuals, tape recorded inserts	
Evaluation Development of instrument Development of implementation (phone, mail, etc.)	

FUNCTIONS | COSTS

LOGISTICAL (INCLUDES PRODUCTION COSTS)

Promotional costs
- purchase of mailing lists
- printing of brochures and labels
- mailing costs

Production of materials
- artwork, layout, typing
- tape recording
- duplication of visual and print

Postage and shipping charges
- for promotion
- for participant materials
- for station equipment

Supplies
- Clerical and art supplies

Additional contingencies
- Rental of rooms at remote locations
- Rental of visual equipment (slide projectors,etc.)
- Installation of telephone jacks
- Travel, food, per diem for guests not brought in via teleconferencing

Mailing list purchase $_____

Printing Costs- print $_____

Production Costs- media $_____

Mailing and shipping charges $_____

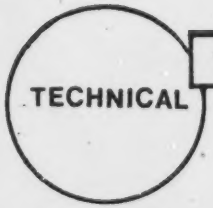
Supplies $_____

Rentals $_____

Installation charges $_____

Miscellaneous travel, food, etc. $_____

H-8



TECHNICAL SYSTEM

BASIS SYSTEM CHOICE: Type of system chosen will be based on program objectives, type of clientele, no. of locations, no. of participants at each location, quality factors, whether visual component needed or optional, equipment or lines that are already accessible, etc.)

STATION EQUIPMENT
- Type of station equipment necessary
- Rent, lease, or purchase?
- No. of microphones in addition to standard
- No. of backup units (if ongoing network)

TRANSMISSION SYSTEM
- Cost of leasing lines for dedicated system
- Cost of dial-up (operator or meet me)
- Access to low-cost telephone lines?

CONTROL CENTER
- Level of sophistication needed, i.e.
- Provide tape inserts, master recording of program, quality control, outside ddd's for guests, etc.

STATION EQUIPMENT

No. of units needed X rent,lease, purchase $_____
No. additonal microphones $_____
No. backup units (if ongoing network) $_____

TRANSMISSION SYSTEM

No. hours X cost of dial-up, dedicated, or low-cost lines (if available) $_____
No. hours X cost of additional line if visual graphics system used $_____
Bridging costs (for non-dedicated) $_____

CONTROL CENTER

Cost will depend on sophistication $_____

PRELIMINARY ANALYSIS: COSTS / FEATURES

FACTORS:
CUMULATIVE DISTANCE (in air miles) _____
LONG DISTANCE CHG. (between farthest points _____
NUMBER OF LOCATIONS _____
ACCESS TO LOW COST LINES _____
NUMBER OF HOURS OF POTENTIAL USE _____
NUMBER OF MONTHS OF POTENTIAL USE _____
VISUAL GRAPHICS NECESSARY? _____

	TYPE OF SYSTEM	DIAL-UP (OPERATOR PLACED)	DIAL-UP (MEET ME)	DEDICATED (LEASED LINES)	AUDIO + VISUAL GRAPHIC
cost calculations	Formula for figuring line charges per hour	No. of locations X person-to-person rate between farthest points	Sum the cost of each of the lines to the bridge at the direct distance dial rate	No. of airline miles X leasing rate per month per mile and divide by hours used per month	2 X cost of any other system to account for extra line
	Calculations in figuring line charges				
	Bridging Charges:				
	Station Equipment (rent, lease,purchase)				
	Control Center				
	Total Charges:				
features	CHARACTERISTICS OF SYSTEMS (See checklist for description of numbers)				

CASE 6-H

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This case represents some of the steps involved in weighing costs and benefits of teleconference systems. Costs are for comparative purposes only and are not intended to represent actual charges. Factors involved in chosing a system include more than costs; factors other than those shown may be part of configuring any given system.

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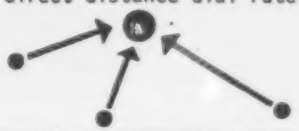
PRELIMINARY ANALYSIS: COSTS / FEATURES

FACTORS:
CUMULATIVE DISTANCE (in air miles) 5812 miles
LONG DISTANCE CHG. (between farthest points $.36 minute
NUMBER OF LOCATIONS 10
ACCESS TO LOW COST LINES no

NUMBER OF HOURS OF POTENTIAL USE 9 hours
NUMBER OF MONTHS OF POTENTIAL USE 1 mo.
VISUAL GRAPHICS NECESSARY? no

	TYPE OF SYSTEM	DIAL-UP (OPERATOR PLACED)	DIAL-UP (MEET ME)	DEDICATED (LEASED LINES)	AUDIO + VISUAL GRAPHI
cost calculations	Formula for figuring line charges per hour	No. of locations X person-to-person rate between farthest points	Sum the cost of each of the lines to the bridge at the direct distance dial rate 	No. of airline miles X leasing rate per month per mile and divide by hours used per month	2 X cost of any other system to account for extra line
	Calculations in figuring line charges	FIRST 3 min. = 3.30 Additional = .36/minute 3.30 + (57 X .36) = 23.82 23.82 X 10 locations = $238.20/HR	Sum of each line to bridge at direct distance dial rate 9 lines total = $188.62/HR	5,812 air miles X $4.50 leasing rate = $26,154/month ÷ 9 hours = $2,906/HR	—
	Bridging Charges:	$86.67/HOUR	$200.00/HOUR	no CHARGES	—
	Station Equipment (rent, lease, purchase)	10 units @ $—	10 units @ $—	10 units @ $—	—
	Control Center	included in charges	included in charges	technician charges	—
	Total Charges:				—
features	CHARACTERISTICS OF SYSTEMS (See checklist for description of numbers)				

CASE

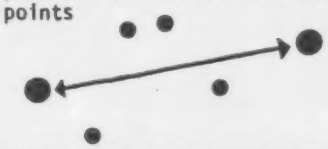
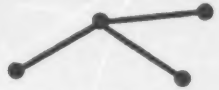
CASE: A governmental agency wishes to provide a training program to participants across the continental United States. The training will involve four sessions of 2 hours each with an additional coordination session for on-site facilitators of 1 hour for a total of 9 hours of teleconferencing. The farthest distance between any two points is at the highest rate category of long distance charges. Total air miles between the 10 locations is 5,812 miles.

This case represents some of the steps involved in weighing costs and benefits of teleconference systems. Costs are for comparative purposes only and are not intended to represent actual charges. Factors involved in chosing a system include more than costs; factors other than those shown may be part of configuring any given system.

PRELIMINARY ANALYSIS: COSTS / FEATURES

FACTORS:
CUMULATIVE DISTANCE (in air miles) 400 miles
LONG DISTANCE CHG. (between farthest points $.35 min
NUMBER OF LOCATIONS 15

NUMBER OF HOURS OF POTENTIAL USE 3 hours day
NUMBER OF MONTHS OF POTENTIAL USE 9 months
VISUAL GRAPHICS NECESSARY? no

	TYPE OF SYSTEM	DIAL-UP (OPERATOR PLACED)	DIAL-UP (MEET ME)	DEDICATED (LEASED LINES)	AUDIO + VISUAL GRAPHIC
H-11 cost calculations	Formula for figuring line charges per hour	No. of locations X person-to-person rate between farthest points 	Sum the cost of each of the lines to the bridge at the direct distance dial rate	No. of airline miles X leasing rate per month per mile and divide by hours used per month 	2 X cost of any other system to account for extra line
	Calculations in figuring line charges	First 3 min. = $1.44 Additional .35/minute 1.44 + (57 min) x .35) = 21.39 21.39 x 15 locations = $320.85/hr.	Sum of direct distance dial rates of each of 14 locations to bridge at Stoughton: $190.85/hr.	400 miles X $4.50 (avg) leasing rate = $1800 per month 22 days x 3 hr. day = 66 hr. 1800 ÷ 66 = $27.27/hr.	———
	Bridging Charges:	$130.00/hour	15 ports @ $ 20.00 = $300/hr.	no charge	———
	Station Equipment (rent, lease, purchase)	15 units @ $ ———	15 units @ $ ———	15 units @ $ ———	———
	Control Center	included in charges	included in charges	technician charges	———
	Total Charges:				———
features	CHARACTERISTICS OF SYSTEMS (See checklist for description of numbers)				

CASE: Fifteen secondary schools want to share classes designed to provide special services to the blind. These classes would take place 3 hours a day throughout the 9-month school year. The schools are located in different points throughout the state. Stoughton School is located nearest the center of the combined area covered by the schools. If straight lines were drawn from Stoughton to the other schools the cumulative distance is 400 miles. The farthest school—Southhampton— is still within the lowest category of the long distance rate schedule for dialed calls.

This case represents some of the steps involved in weighing costs and benefits of teleconference systems. Costs are for comparative purposes only and are not intended to represent actual charges. Factors involved in chosing a system include more than costs; factors other than those shown may be part of configuring any given system.

CASE STUDY 1

Recently, federal legislature passed a mandatory certification process for rehabilitation counselors. A part of this process is certification maintenance, whereby certified counselors must accrue 30 contact hours of continuing education in each year to maintain their certification.

You are the coordinator of staff development for a state VR agency with an annual training budget of $25,000. There are 125 counselors employed by your agency and dispersed statewide, who now will need to receive the minimum number of contact hours of continuing education each year. To add to this problem, your state governor just passed a 25% travel reduction.

Design a plan for a one year's training calendar that will:

1. Meet the certification maintenance needs of all of the new counselors within your agency.
2. Stay within the allotted training budget.
3. Minimize "downtime" needed for staff to attend training activities.

CASE STUDY 2

You are the director of a Regional Rehabilitation Continuing Education Program in a five-state region which provides continuing education to over 2,000 rehabilitation personnel at all levels in 10 state VR agencies.

For the upcoming fiscal year, you have budget $45,000 to provide a total of 65 days of training to 1,000 rehabilitation professionals within your region. Unfortunately, however, you have recently been notified of a 25% budget cut.

What kind of training delivery alternative can you devise which might enable you to fulfill your training commitments at the reduced funding level?

Design a plan specifying the equipment, tasks and considerations necessary for fulfillment.

CASE STUDY 3

As Coordinator of training for a Rehabilitation Research & Training Center, you are responsible for designing a training program of national scope. This training program must reach a cross section of rehabilitation trainees in each region, representing regional rehabilitation research & training centers, rehabilitation counselor education programs and staff development personnel of state vocational rehabilitation agencies and rehabilitation facilities.

The training delivery parameters are as follows:

You have a limited amount of trainer time and money available to design and delivery your product; and

The nature of the curriculum content is such that presentation of live interactive visual material is not necessary.

Describe the training delivery strategy that you will implement to fulfil your commitment.

GLOSSARY OF TELECONFERENCING TERMS

Amplified telephone: The general term for a "hands-free" telephone, using a loudspeaker and microphone unit rather than a telephone handset.

Audio teleconferencing: Group voice communication relying on exchanges among more than two participants via voice.

Bandwidth: The distance between the lowest and highest frequencies that can be sent over a given transmission facility. Wider ranges (e.g., about 3 million cycles per second -- the bandwidth of a TV channel) are called "broadband." Video teleconferencing is considered a broadband medium. Narrow ranges (e.g., 3,000 cycles per second -- the bandwidth of telephone voice transmission) are called "narrowband." Audio teleconferencing is narrowband communication. Certain types of graphics and still images can be transmitted over the telephone and other narrowband channels.

Bridge: A term used to describe the linking of three or more lines, usually via telephone circuits as in a conference call.

Broadcast: One-way transmission of information.

Cable television: A transmission system that distributes broadcast television signals, original programs, and other services by means of a coaxial cable. Most cable systems also have the potential for two-way communication.

Closed-circuit microwave: A private system for transmitting television signals, such as a university TV network.

Common carriers: An organization (such as telephone operating companies) that provides communication services to the general public at nondiscriminatory rates, without control of message content.

Computer conferencing: Group communication through a computer. Such "conferences" may involve simultaneous communication or "asynchronous" meetings that allow participants to enter the conference at random times. Computer conferencing systems are normally not complicated to use and should not require special computer expertise. Some systems provide a hard copy of the conference.

*Conference calls: Dial-up, operator-assisted phone calls between more than two individuals or groups.

*Confravision: European video conferencing service. Broadband transmissions of visual images over cable, microwave or satellite.

*Dial-up teleconferencing: Interconnecting telephone lines, either with or without operator assistance over non-permanent network or via conference call.

Terms and definitions without asterisks are based on Johansen, R., McNulty, M. and McNeal, B., Electronic Education: Using Teleconferencing in Postsecondary Organizations, Institute for the Future, Menlo Park, California, August 1978.

Darome Convener: Darome is a brand name; Convener is the name of a popular audio teleconferencing set developed by the company. The Convener has portable speakers and table microphones.

Dedicated system: Special transmission circuits devoted to a specific application. Such "dedicated" systems usually provide higher quality service than using public networks, but they also are more costly unless a high volume of usage is involved.

Electronic Blackboard: A system for sending writing over a telephone line. As the sender writes on a normal-looking chalkboard, the writing appears in the remote location on a television monitor. Interaction is possible when the outlying locations have electronic blackboards as well as monitors.

*Electronic pens (electrowriter): Systems for sending written information over a telephone line. The sender writes on a special pad, and the receiver sees the writing appear on a piece of paper or on a projection screen.

*Electronic transmission: General term referring to electronic transmission of data and mail usually as digital information linked into a central computer.

Facsimile: A telecopying device that sends page copies over telephone lines to a terminal at a remote location. Various speeds of transmission are used to relay the scanned information.

50-A Portable conference telephone: One of the most common audio teleconferencing devices. A specific make of amplified telephone developed by Western Electric and distributed by the Bell System.

Four-wire circuit: A four-wire circuit usually avoids some of the electrical echo problems associated with the normal (i.e., "two-wire") telephone network. A four-wire circuit allows two locations to talk and be heard simultaneously, thereby giving a greater sense of presence.

Interactive media: Telecommunications systems that allow direct exchanges among people via one or more communication channels (e.g., voice, writing or visual). Interactive media describe systems that allow a high degree of interpersonal communication.

*Media-mixes: Hybrid of two or more communication technologies.

Narrowband: see Bandwidth.

*Plato computer system: Interactive computer system manufactured by Control Data Corporation and used primarily for instruction.

*Picturephone Meeting Service: A.T.&T.'s broadband video conferencing service. Full-motion images are transmitted via microwave, cable or satellite.

*QUBE: Two-way, interactive cable TV system in Columbus, Ohio.

*SCA-FM: Subsidiary Communications Authorization: an electronic technique that places the radio signal on the FM spectrum. These signals can only be picked up with special tuners that pick out the SCA from regular FM.

*Satellite conferencing: With the communications technology satellites and experiments being done by Satellite Business Systems, two-way satellite conferencing will be conducted directly from site-to-site, bypassing terrestrial links.

Slow-scan television: System for exchanging still video images, displayed on television monitors. Removing the requirement to provide full moving images means that narrowband transmission channels (often a normal telephone line) can be used for transmission, with a reduction in cost over full video teleconferencing.

Speakerphone: An amplified telephone, allowing "hands-free" usage. Speakerphone is often the shorthand designation for the Western Electric 4-A.

Telecopier: See facsimile.

*Telpak: Arrangement through which a telephone customer can order a group of intercity circuits between specific points and pay a flat fee per mile.

Transmission line: The means by which a signal is sent and received. Transmission "line" is sometimes used to refer to a satellite or microwave link.

Two-wire circuit: A typical telephone transmission circuit. In some applications, a two-wire system is less preferable than a"four-wire" because it requires voice switching to avoid electrical echo and leakage. See "Four-wire."

*Videophone: Either one-way or two-way broadcast image service either over microwave, cable or satellite. This term also refers to the early experiments with video crossing narrowband and broadband technology.

Video teleconferencing: Audio plus full visual conferencing for a group of people. Typically, such systems provide room-to-room linkages, with live television (sometimes in color) and voice communication.

Voice-grade line: The bandwidth used for normal voice transmission (e.g., over a telephone network).

Voice switching: Electrical technique for opening an audio circuit only to the person who is currently speaking. Such a system allows only one person to speak at a time, often without the capability to be interrupted. This is an effective technique for avoiding specific acoustical and electrical problems that are often associated with audio teleconferencing.

GLOSSARY OF TERMS*

Aeronautical Mobile-Satellite Service — A mobile-satellite service in which mobile earth stations are located on board aircraft. Survival craft stations and emergency position indicating radio-beacon stations may also participate in this service.

Aeronautical Radionavigation-Satellite Service — A radionavigation-satellite service in which mobile earth stations are located on board aircraft.

Active Satellite — An earth satellite intended to transmit or retransmit radio-communication signals.

Amateur-Satellite Service — A radiocommunication service using space stations on earth satellites for the same purposes as those of the amateur service.

**Apogee* — The point in the orbit of a satellite that is farthest from the earth.

Broadcasting-Satellite Service — A radiocommunication service in which signals transmitted or retransmitted by space stations are intended for direct reception[1] by the general public.

**Broadcast Satellite* — A high-powered satellite which relays radio waves to a limited geographic area, requiring a small, inexpensive ($200-2,500) earth terminal or antenna attached directly to a television or radio receiver, or requiring no earth terminal or antenna at all.

Community Reception (in the broadcasting-satellite service) — The reception of emissions from a space station in the broadcasting-satellite service by receiving equipment, which in some cases may be complex and have antennas larger than those used for individual reception, and intended for use:

—by a group of the general public at one location; or

—through a distribution system covering a limited area.

Coordination Area — Area around an earth station enclosed by the coordination contour.

Coordination Contour — The line joining the points which are on all azimuths around an earth station at a distance from this station equal to the coordination distance corresponding to each azimuth.

Coordination Distance — Distance from an earth station in a given azimuth within which a terrestrial station sharing the same frequency band may cause or be subject to more than a permissible level of interference.

Deep Space — Space at distances from the earth approximately equal to, or greater than, the distance between the earth and the moon.

**Distribution Satellite* — Medium-powered satellite which relays radio waves to a limited geographic area, requiring a medium-sized and priced ($100,000-500,000) earth station.

**Domestic Satellite* — A satellite which provides communication services primarily to one nation.

Earth Exploration-Satellite Service — A radiocommunication service between earth stations and one or more space stations in which:

—information relating to the characteristics of the earth and its natural phenomena is obtained from instruments on earth satellites;

—similar information is collected from airborne or earth-based platforms;

—such information may be distributed to earth stations within the system concerned;

—platform interrogation may be included.

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*Those terms and definitions *without* asterisks are from the ITU proposed terms and definitions concerning outer space telecommunication from the Final Acts of the World Administrative Radio Conference for Space Telecommunications, Geneva, 1971.

[1]In the broadcasting-satellite service, the term "direct reception" shall encompass both individual reception and community reception.

Reprinted from Polcyn, K.A., An Educator's Guide to Communication Satellite Technology, Andromeda Books, Washington, D.C., 1975. Distributed by University of Wisconsin-Extension, Center for Interactive Instructional Programs, Madison, Wisconsin.

Earth Station — A station located either on the earth's surface or within the major portion of the earth's atmosphere for communication:

—with one or more space stations; or

—with one or more stations of the same kind by means of one or more passive satellites or other objects in space.

Equivalent Isotropically Radiated Power — The product of the power of an emission as supplied to an antenna and the antenna gain in a given direction relative to an isotropic antenna.

Equivalent Satellite Link Noise Temperature — The noise temperature at the input of the earth station receiver corresponding to the radio-frequency noise power which produces the total observed noise at the output of the satellite link excluding noise due to interference coming from satellite links using other satellites and from terrestrial systems.

Fixed-Satellite Service — A radiocommunication service:

—between earth stations at specified fixed points when one or more satellites are used; in some cases this service includes satellite to satellite links, which may also be effected in the inter-satellite service;

—for connection between one or more stations at specified fixed points and satellites used for a service other than the fixed-satellite service (for example, the mobile-satellite service, broadcasting-satellite service, etc.).

**Front End* — Antenna and associated components, excluding television or radio sets, which are used to receive and translate satellite relayed radio waves.

Geostationary Satellite — A satellite, the circular orbit of which lies in the plane of the earth's equator and which turns about the polar axis of the earth in the same direction and with the same period as those of the earth's rotation. The orbit on which a satellite should be placed to be a geostationary satellite is called the "geostationary satellite orbit."

Geosynchronous Satellite — An earth satellite whose period of revolution is equal to the period of rotation of the earth about its axis.

**Half Circuit* — A two-way communication path suitable for voice exchange between one earth station and a satellite.

Inclination of an Orbit (of an earth satellite) — The angle determined by the plane containing an orbit and the plane of the earth's equator.

Individual reception (in the broadcasting satellite service) — The reception of emissions from a space station in the broadcasting-satellite service by simple domestic installations and in particular those possessing small antennas.

Inter-Satellite Service — A radiocommunication service providing links between artificial earth satellites.

Land Mobile-Satellite Service — A mobile-satellite service in which mobile earth stations are located on land.

Maritime Mobile-Satellite Service — A mobile-satellite service in which mobile earth stations are located on board ships. Survival craft stations and emergency position indicating radio-beacon stations may also participate in this service.

Meteorological-Satellite Service — An earth exploration-satellite service for meteorological purposes.

Mobile-Satellite Service — A radiocommunication service:

—between mobile earth stations and one or more space stations; or between space stations used by this service;

—or between mobile earth stations by means of one or more space stations;

—and if the system so requires, for connection between these space stations and one or more earth stations at specified fixed points.

Multi-Satellite Link — A radio link between a transmitting earth station and a receiving earth station through two or more satellites, without any intermediate earth station. A multi-satellite link comprises one up-path, one or more satellite-to-satellite paths and one down-path.

Orbit — 1. The path, relative to a specified frame of reference, described by the center of mass of a satellite or other object in space, subjected solely to natural forces,

mainly the force of gravity.

2. By extension, the path described by the center of mass of an object in space subjected to natural forces and occasional low-energy corrective forces exerted by a propulsive device in order to achieve and maintain a desired path.

Passive Satellite — An earth satellite intended to transmit radiocommunication signals by reflection.

**Perigee* — The point in the orbit of a satellite that is closest to the earth.

Period of a satellite — The time elapsing between two consecutive passages of a satellite or planet through a characteristic point on its orbit.

**Point-to-Point Satellite* — A relatively low-powered satellite which relays radio waves to a large geographic area requiring large expensive ($2-4 million) earth station.

**Prime Power* — Total electrical power which can be generated in a communication satellite.

Radio Frequency Power — A portion of the prime power which can be used to relay radio signals.

Satellite — A body which revolves around another body of preponderant mass and which has a motion primarily and permanently determined by the force of attraction of that other body.

Satellite Link — A radio link between a transmitting earth station and a receiving earth station through one satellite. A satellite link is comprised of one up-path and one down-path.

Satellite Network — A satellite system or a part of a satellite system, consisting of only one satellite and the cooperating earth stations.

Satellite System — A space system using one or more artificial earth satellites.

Spacecraft — A man-made vehicle which is intended to go beyond the major portion of the earth's atmosphere.

Space Operation Service — A radiocommunication service concerned exclusively with the operation of spacecraft, in particular tracking, telemetry and telecommand. These functions will normally be provided within the service in which the space station is operating.

Space Radiocommunication — Any radiocommunication involving the use of one or more space stations or the use of one or more passive satellites or other objects in space.

Space Research Service — A radiocommunication service in which spacecraft or other objects in space are used for scientific or technological research purposes.

Space System — Any group of cooperating earth and/or space stations employing space radiocommunication for specific purposes.

Standard Frequency-Satellite Service — A radiocommunication service using space stations on earth satellites for the same purposes as those of the standard frequency service.

Terrestrial Radiocommunication — Any radiocommunication other than space radiocommunication or radio astronomy.

Terrestrial Station — A station effecting terrestrial radiocommunication.

Time Signal-Satellite Service — A radiocommunication service using space stations on earth satellites for the same purposes as those of the time signal service.

APPENDIX I

Applications of Teleconferencing in Rehabilitation

APPLICATIONS OF TELECONFERENCING IN REHABILITATION*

Staff training

Academic courses

Training applicaiton review

Planning and development priorities

Continuing reinforcement and motivation to trainees after training

On-the-job training

Provide consultatnts to counselors when required in special cases or clientele

Staff evaluation

Up-date information on special aids and devices for handicapped

Pre-conference planning

Impart technical information

Increase consumer involvement

Brainstorming

Teaching tool for educators of the blind to develop their own effectiveness

Increase communications potential between R&T centers

Up-date information on legislation and interpretation of regulations

Better communication between central and district offices in state VR agencies

Training for fiscal and statistical staff of state VR agencies

Regional short term training grant reviews

Increased communication between RSA Central and Regional offices

*Compiled from suggestions brainstormed at each location and shared over the network during Session II, July 20, 1979.

BOSTON

I would consider using teleconferencing for very short sessions (45 minutes) when terrific lecturers presented information with some discussion time. I think there are very limited uses of teleconferencing for me. I would plan to use it with people who have common interest or purpose (i.e., all lawyers, all special education teachers, etc.). The system really depends upon local visual aids. I think one program plan for telecommuniations might be a current events type or rehabilitation issue focus that might be presented every two weeks or something. This would give opinions and generate discussion. It would work best on lunch-time programs.

Participant at Boston teleconference

The first activity would be to analyze the need for a telecommunication system network by doing a cost-benefit analysis. The analysis should separate out the costs to the institutions presenting the program from the costs attributable to the consumer. Assessing its cost-effectiveness, one must also document a need for the training (or whatever activity) that will be presented thru this medium.

If the above activities, do not warrant utilizing the telecommunications and/or the contents , the project would be amended accordingly.

In formulating a plan to utize the conepts and techniques of telecommunications one would approach this cautiously. The 3 session demonstration indicated not only the "techniques" but demonstrated that the technology is limited by the users' ability to control the system.

Whether or not a follow-up teleconference would be useful requires another cost effective analysis.

The question asks us to formulate a plan, but the assumption is that the telecommunications is viable. A cautious analysis is a necessary prerequisite to developing a plan.

Participant at Boston teleconference

It is reasonable, I think, to have individual state agencies consider putting in place a dedicated audio conferencing network. It is cost/effective and the technology is there. RSA should encourage, with funds, the front-end costs of system establishment.

An individual from the state agency, outside source or Regional Office, should do a "road show" to state VR administrator staffs

No. What would be useful now is the infusion of telecommunication into existing training efforts in rehab. This can be done relatively cheaply & easily. What is needed in proactive technical assistance to states and training programs.

Participant at Boston teleconference

Application of Telecommunications in Rehabilitation

Summary List

1. Problem Solving

   interactive media providing direct involvement of all participants

2. Orientation

   routine statewide orientation for new DRS field staff

3. Committee Meetings

   particularly with convener and microphone equipment would provide superior audio quality to conference call

4. Administrative Discussions

5. Consultation Among Professionals

Comment: Our group generally expressed reservations regarding the use of telecommunications for training. The system as we experienced has potential for use as a supplement, but not, we felt, a major training mode.

Telecommunications and Rehabilitation: A Teleconference
Session II, July 27, 1979
Philadelphia, PA site
Regional Facilitators:

William Morgan
RSA Training Specialist, Region III
Philadelphia, PA

Roberta R. Sadler, Ph.D.
Director, Research Utilization Laboratory
Woodrow Wilson Rehabilitation Center
Fishersville, VA

ATLANTA

I feel strongly that the current potential for teleconferencing lies in objective conferencing. I can envision very beneficial application of this technique to addressing committee and advisory group tasks, accomplishing affective peer review and other applications which involve efforts to arrive at consensus agreements among informed memebers of many differenct types of groups. Perhaps we can immediately begin to evaluate potential application of teleconferencing used in this manner.

Gordon Doss
Director of Administration & Education
Department of Rehabilitation Medicine
University of Alabama/Birmingham

MINNEAPOLIS

"...here is a listing of what our Minneapolis group arrived at:

--small scale problem solving
--standard orientation programs
--state level administration contact
--accessing medical aspects of rehabilitation
--delivery of training
--bringing national/international experts into training
--case or program consultation
--follow-up to training
--response to immediate and/or specific training needs
--client counseling (individual or group)
--field testing new program material
--provision of refresher or update information
- program evlauation: data collection paperwork
--needs assessment
--provision of technical assistance
--resolving organization problems regarding training conduction
--advisory committee meetings
--periodic meetings with regional administrators
--fund raising

Jim Boyd, Training & Development Specialist
RSA, Region V Center for Continuing Education
Letter dated October 1, 1979 (page 3)

APPLICATIONS OF TELECONFERENCES TO FIELD OF DEAFNESS

(New York participant)

Rehabilitation Applications

State and regional meetings of agency personnel

Sensitivity training of professional workers in field

Meetings with post-secondary schools that offer programs to the deaf to assess when and how these meet clients' needs

Conferences with otologists, audiologists and hearing aid dealers

Educational Applications

Outreach program introducing Great Teachers ac ross the country

Treatment of mental illness in deaf patients for doctors

Discussion of religious customs among the deaf for clergymen

Other Applications

Auditions for professional school training via Picturephone for for applicants to the National Theater of the Deaf

Projected Applications of
Telecommunications to
Rehabilitation Personnel Training
in FY 1979-80

1. Teleconferencing used to "bring in" consultant expertise for various segments of training programs

2. Conference calls used in place of or to augment advisory board meetings for policy building and training orientation

3. Modularized (7 Segments) Stress Management Training Program offered by teleconference to seven district offices of a state VR agency simultaneously

4. Teleconferencing used in an Independent Living Research Utilization Project

5. Teleconferencing used to deliver training statewide to physicians' assistants

6. Use of conference calls to conduct training needs assessment and program development meetings

7. Use of teleconferencing in rural medical consultation

8. Use of teleconferencing in conjunction with video tape materials in training secretaries and counselors

9. Use of teleconferencing to conduct statewide VR agency administrative-supervisory meetings

10. Use of satellite to distribute selected training to rehabilitation professionals across two regions

11. Use of computer to link together trainers in a region and provide access to information retrieval systems

APPENDIX J

List of Participants by Location

TELECOMMUNICATIONS TRAINING: BOSTON
PARTICIPANT LIST

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TELECOMMUNICATIONS TRAINING: NEW YORK CITY
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TELECOMMUNICATIONS TRAINING: Seattle
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APPENDIX K

Evaluation Materials

sign-in sheet

SESSION I

TELECOMMUNICATIONS IN THE TRAINING OF REHABILITATION PERSONNEL

FRIDAY JULY 20,1979

	NAME	ORGANIZATION	PHONE
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sign-in sheet

SESSION II

TELECOMMUNICATIONS IN THE TRAINING OF REHABILITATION PERSONNEL

FRIDAY JULY 27, 1979

	NAME	ORGANIZATION	PHONE
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sign-in sheet

SESSION III

TELECOMMUNICATIONS IN THE TRAINING OF REHABILITATION PERSONNEL

FRIDAY AUGUST 3, 1979

	NAME	ORGANIZATION	PHONE
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FeedbackForm

To:

From:

Date:

Feedback on today's session:

For each question, circle the number that best describes your opinion:

1. On the whole, how would you rate this session?

   Poor 1 2 3 4 5 6 7 Excellent

2. The relevance of the content of the session to your work--its potential usefulness.

   Very limited 1 2 3 4 5 6 7 Of high value

3. The newness of the topic or material to you.

   Not New 1 2 3 4 5 6 7 Very New

4. The effectiveness of the presenter(s) in getting the ideas across.

   Limited 1 2 3 4 5 6 7 Very effective

5. Of the times you wanted to make a comment or ask a question , the reason you did not was because:

   1 I couldn't break in when I wanted to.
   2 There wasn't time to phrase my question.
   3 Someone else said it.
   4 I felt my question was too specific to my own needs--not of interest to the group.

Comments, questions, concerns:

_____

_____

_____

_____

_____

FOLD THIS FORM SO THAT THE MAILER ON THE REVERSE SIDE IS SHOWING, TAPE OR STAPLE, AND PLACE IN A MAILBOX.

sign-in sheet

SESSION III

TELECOMMUNICATIONS IN THE TRAINING OF REHABILITATION PERSONNEL

FRIDAY AUGUST 3, 1979

	NAME	ORGANIZATION	PHONE
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FeedbackForm

To:

From:

Date:

Feedback on today's session:

For each question, circle the number that best describes your opinion:

1. On the whole, how would you rate this session?

   Poor 1 2 3 4 5 6 7 Excellent

2. The relevance of the content of the session to your work--its potential usefulness.

   Very limited 1 2 3 4 5 6 7 Of high value

3. The newness of the topic or material to you.

   Not New 1 2 3 4 5 6 7 Very New

4. The effectiveness of the presenter(s) in getting the ideas across.

   Limited 1 2 3 4 5 6 7 Very effective

5. Of the times you wanted to make a comment or ask a question , the reason you did not was because:

   1 I couldn't break in when I wanted to.
   2 There wasn't time to phrase my question.
   3 Someone else said it.
   4 I felt my question was too specific to my own needs--not of interest to the group.

Comments, questions, concerns:

_____

_____

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UNIVERSITY OF WISCONSIN-EXTENSION
432 North Lake Street
Madison, Wisconsin 53706

REHABILITATION DEPARTMENT/
TELECOMMUNICATIONS TECHNOLOGY

Seattle University

SEATTLE, WASHINGTON 98122
TELEPHONE (206) 626-5794

TELECOMMUNICATIONS IN THE TRAINING OF REHABILITATION PERSONNEL

REGIONAL FACILITATORS:

Enclosed you will find "Pre-Program Surveys" which should be administered during the half hour "off-air" portion of the first training session (July 20th), before the on-air portion of the program begins.

Please have each participant who plans to attend all three sessions complete a Pre-Program Survey and return it to you before the on-air portion of the program begins.

Please place the completed surveys in the self-addressed, prepaid envelope which was supplied with your box of print materials. If you cannot locate the envelope marked for this purpose, please send the completed forms to:

University of Wisconsin-Extension
Attention: Paul Edison-Swift, ICS
432 North Lake Street
Madison, WI 53706

Please read the exact introduction as it is printed below, so that standard instructions will be provided at each location.

Thank you very much for your assistance!

STANDARD INSTRUCTIONS:

(PASS OUT SURVEYS TO ALL PRESENT)

"In order to try to assess the effectiveness of this short-term training program, it would be very helpful if you would assist by completing a Pre-Program Survey.

With the results of this survey, and a similar instrument to be administered after the last training session, we hope to be able to assess the impact of the training, and use this information to improve the organization and content of future programs.

The survey is intended to gather some information about you, and your attitudes toward and knowledge about teleconferencing. The entire survey is designed to take less than 10 minutes to complete.

Thank you so much for your time and cooperation. We appreciate your help in our research and evaluation effort! "

PRE-PROGRAM SURVEY

Telecommunications In The Training Of Rehabilitation Personnel

Your participation in the research/evaluation component of this short-term training program will help improve future teleconference training efforts. All replies are confidential, your name is requested for proper matching of pre and post survey instruments. Thank you for your cooperation!

1. How many face-to-face, work-related conferences or workshops have you attended during the last 12 months?

_____ (fill in the number)

2. How many 2-6 party "conference calls" did you take part in during the last 12 months?

_____ (fill in the number)

3. How many "teleconferences" did you take part in during the last 12 months?

_____ (fill in the number)

4. Please rank order the following ways of communicating according to how much time you spend doing each at your job.("1"being the most frequent)

_____ PRINT
_____ FACE-TO-FACE
_____ TELEPHONE

5. Please rank the following ways of communicating according to which ones you feel the most comfortable with. ("1" being the most comfortable)

_____ PRINT
_____ FACE-TO-FACE
_____ TELEPHONE

6. How well acquainted are you with <u>most</u> of the other participants at your teleconference site? (Circle the number of one response)

1. I've never seen most of these people before.
2. I've seen most of these people at one time or another.
3. I've been introduced to most of these people before today.
4. I've known most of these people on a working basis before today.
5. I know most of these people very well.

7. How likely is it that the technique of teleconferencing will help you in your rehabilitation personnel training efforts?

   1. Very likely
   2. Somewhat likely
   3. Likely
   4. Unlikely
   5. Very unlikely

8. How comfortable would (do) you feel setting up and operating teleconferencing equipment?

   1. Very comfortable
   2. Comfortable
   3. Uncomfortable
   4. Very uncomfortable

9. To your knowledge, may regular telephone lines be used during a teleconference?

   1. YES
   2. DON'T KNOW
   3. NO

10. Name four techniques for improving a teleconference program:

    1. _____
    2. _____
    3. _____
    4. _____

11. Name up to three of the basic technical components of any teleconferencing system:

    1. _____
    2. _____
    3. _____

12. What is your main goal for this teleconference? _____

    _____

    _____.

15. BACKGROUND INFORMATION:

Name: _____ Date: _____

Organization Name: _____

Position/Occupation: _____

Number of years in above organization: _____ Sex: ___Male; ___Female

Age: _____20-25; _____26-35; _____36-45; _____45 or more.

Number of years of full-time education beyond high school: _____

16. Excluding these short-term training sessions, do you have any definite plans to take part in a teleconference during the next 12 months? (Circle one)

1. Yes
2. No

REHABILITATION DEPARTMENT/
TELECOMMUNICATIONS TECHNOLOGY

Seattle University

SEATTLE, WASHINGTON 98122
TELEPHONE (206) 626-5794

TELECOMMUNICATIONS IN THE TRAINING OF REHABILITATION PERSONNEL

REGIONAL FACILITATORS:

In this mailing you should find the following materials for use during Session III (August 3rd) of this short-term training program:

1. Post-Program Surveys (to be completed immediately after the third session).
2. Glossary of teleconferencing and satellite terms.
3. Information on accessing Meet-Me Bridge time.

Please pass out items 2 and 3 at the beginning of the session on August 3rd. Please administer the post-program survey at the completion of the training session.

Printed below are standard instructions for administering the post-program survey instrument. Please read them precisely to ensure standard administration at each site. Thank you.

STANDARD INTRODUCTION TO POST-PROGRAM SURVEY

" Please assist in evaluating and improving this type of teleconference training by completing a short post-program survey.

The results of this survey, along with the pre-program survey administered 3 weeks ago will help us to assess the impact of the training, and will influence the content and organization of future training programs.

The survey should take less than 10 minutes to complete. Thanks for your cooperation! "

MAILING INSTRUCTIONS

Please collect the surveys from all participants and mail them as soon as possible, using the self-addressed, pre-paid envelope supplied in this mailing. If you are unable to locate that envelope, please send the completed forms to:

University of Wisconsin-Extension
Attention: Paul Edison-Swift, ICS
432 North Lake Street
Madison, WI 53706

POST-PROGRAM SURVEY

Telecommunications In The Training Of Rehabilitation Personnel

Your participation in the research/evaluation component of this short-term training program will help improve future teleconference training efforts. All replies are confidential, your name is requested for proper matching of pre and post survey instruments. Thank you for your cooperation!

NAME:_____ DATE:_____

ORGANIZATION:_____

1. How likely is it that the technique of teleconferencing will help you in your rehabilitation personnel training efforts? (Circle the number of one response).

   1. Very likely
   2. Somewhat likely
   3. Likely
   4. Unlikely
   5. Very unlikely

2. How comfortable would (do) you feel setting up and operating teleconferencing equipment?

   1. Very comfortable
   2. Comfortable
   3. Uncomfortable
   4. Very uncomfortable

3. Do you feel you achieved your main goal for this short-term training program?

   1. Yes
   2. No

4. On the whole, how would you rate this three-day training session? (Please circle the number that best describes your opinion)

   Poor 1 2 3 4 5 6 7 Excellent

5. How would you rate the relevance of the content of the training program to your work--its potential usefulness?

   Poor 1 2 3 4 5 6 7 Excellent

How would you rate the effectiveness of the presenters in getting ideas across?

Poor 1 2 3 4 5 6 7 Excellent

6. Of the times you wanted to make a comment or ask a question, the reason you did not was because: (circle one response)

   1. I couldn't break in when I wanted to.
   2. There wasn't time to phrase my question.
   3. Someone else said it.
   4. I felt my question was too specific to my own needs, not of interest to the group.

7. To your knowledge, may regular telephone lines be used during a teleconference?

   1. Yes
   2. Don't know
   3. No

8. Name four techniques for improving a teleconference program:

   1. _____
   2. _____
   3. _____
   4. _____

9. Name up to three of the basic technical components of any teleconferencing system:

   1. _____
   2. _____
   3. _____

10. Please indicate below your comments, suggestions, or questions:

_____

_____

_____

_____

_____

_____

_____

_____

_____

11. How satisfactory do you think you would find a teleconference for the following activities? For each activity, place an "x" on the spot on the scale which best reflects your opinion.

Completely satisfactory — Completely unsatisfactory

Giving Or Receiving Information

1 ——|——|——|——|——|——|—— 7

Asking Questions

——|——|——|——|——|——|——

Decision Making

——|——|——|——|——|——|——

Problem Solving

——|——|——|——|——|——|——

Generating Ideas

——|——|——|——|——|——|——

Getting To Know Someone

——|——|——|——|——|——|——

12. Using the scales below, please indicate yourpresent feelings toward teleconferencing. Please complete all of the scales, even though you may find some of them strange or inappropriate. It is your first reaction that is important, so do not spend a long time thinking or going back to any of the items.

Important	_____:_____:_____:_____:_____:_____:_____	Unimportant
Secure	_____:_____:_____:_____:_____:_____:_____	Insecure
Bad	_____:_____:_____:_____:_____:_____:_____	Good
Enjoyable	_____:_____:_____:_____:_____:_____:_____	Unenjoyable
Impersonal	_____:_____:_____:_____:_____:_____:_____	Personal
Beautiful	_____:_____:_____:_____:_____:_____:_____	Ugly
Insensitive	_____:_____:_____:_____:_____:_____:_____	Sensitive
Colorful	_____:_____:_____:_____:_____:_____:_____	Colorless
Satisfying	_____:_____:_____:_____:_____:_____:_____	Frustrating
Constricted	_____:_____:_____:_____:_____:_____:_____	Spacious
Sociable	_____:_____:_____:_____:_____:_____:_____	Unsociable
Confidential	_____:_____:_____:_____:_____:_____:_____	Public

APPENDIX L

Selected Participant
Comments from
Post-Program Survey

POST PROGRAM SURVEY COMMENTS

Vocational Rehabilitation
Tennessse General Agency
August 3, 1979

Telecommunications has real training possibilities in our state. I would like to see RRCEP at U.T./Knoxville develop and coordinate the system. Researchers have done a good job in this three day course; now we need your help with administrators to "sell" the program. Many administrators will consider that cost would be to high for us.

Those who completed the full twelve hours of training deserve a "certificate" of recognition

U.S. Maine
August 3, 1979

Most people at Boston station felt negatively about this demonstration of the medium. I found it interesting--the negative aspects (which were many) gives me food for thought about using the medium as a training tool. Participation made me acutely aware of the importance of careful design of telecommunication events.

DHEW/OHDS/RORS
August 3, 1979

Use of current conference calls to 6 state representatives in our Region V area has been very effective already--see little difference between the two systems except your has more stations and better quality of sound and individual microphones.

Real problems and other areas of discussion serve as a better base for teleconference calls than simulated ones thus interaction is more natural we find.

Your training was good but too long sessions and too much lecture for good demonstration of its positive nature. We like overall system--much potential

Texas Rehabilitation Commission
August 3, 1979

Would like to know where I could get more in depth training to pick up where these sessions left off on system design and implementation also operation. Besides program design and implementation.

Colorado Regional Cancer Center
August 2, 1979

I felt I learned a lot about telecommunications. Having the handbook will help me to remember and review. Think it would be helpful to leave included "estimating costs" in the handbook since that question seemed to come up so frequently. Sometimes the conference moved slowly. Made me think about interaction rhythms and that it is more awkward and less spontaneous with this media.

UCIR
August 3, 1979

This was quite a unique training experience and the "bugs" should not be allowed to distract from its overall positive impact in terms of both process and content. The style, format, and objectives were all quite professional, and the fact it happened at all should be noted and remembered as a singular acievement!! P.S. --the coffee, cookies, etc. were appreciated!!!

Disability Determination Service
Michigan

You did a great job considering the great diversity in the skills and knowledges of the participants.

My greatest criticism is that there is a general feeling (maybe only mine) that you were "selling" the avantages of a "Cadilac" to lots of folks who just wanted to learn how to drive. Some simple models (3 location) would get more people started now.

Ag & Natural Resources Education Institute
August 3, 1979

I thought this was a good introduction to the overall teleconferencing system. More in-depth coverage of budgeting, technicalities, instructional design, etc. would be a good next step.

Cal State Univ. / Hayward
undated

Too big a group
Needs to be for specialized audiences
Limit to specific topics

The whole thing was extremely well organized and coordinated!

PRCEP
August 3, 1979

Much of this could have been done off-air through further use of facilitators. Over all, I felt it was an informative, well-planned conference which will be of benefit to all participants.

Thanks!

PRCEP/DVR Hawaii
August 6, 1979

I think Susanne and Lorne did a beautiful job in presenting a new media using that media. I want to compliment them both on their responsiveness to participant's suggestions and critque. Though Susanne attempted to eliminate an "inner circle" from developing, it did happen and I might suggest that people refrain from using the conference to say hello to their friends in wherever. One other suggestion may be to vary the times of the meeting -- 6:00 am in Honolulu is early 3 weeks in a row!

Texas Rehab Commission
August 3, 1979

Found information enlightening and very interesting. It is a form of communication and teaching which will prove invaluable.

Have found that smaller groups are much better for participation and feedback, participants seem less inhibited. In large group same people spoke--becoming monotonous. Full and enthusiastic participation is the best too a trainer has. Any further info -- please include Houston.

Ohio Rehab Services
August 3, 1979

It was a needed program and did serve its purpose in introducing the technique.

Kentucky Bureau for the Blind
August 3, 1979

Teleconferencing excellent for management tool. However, I am not convinced that it is cost effective or effective for training of personnel. Telecom. excellent for information purposes for blind consumers.

Ohio Rehab Services Commission
August 3, 1979

It was a useful learning experience.

UW/Milwaukee RCEP
August 3, 1979

I was pleased that I remained for the 3 sessions. I found the initial session highly disappointing and frustrating due to lack of early coverage of basic concepts, definitions, etc. and obvious time loss due to technical problems. The content in subsequent sessions and attention to concerns of participants was encouraging and allowed me to come away from the conference with a basically positive attitude. You may want to consider more careful consideration of the baseline knowledge levels of such a heterogeneous audience and plan accordingly.

Region V Center for Continuing Education
August 3, 1979

The whole concept of training via telecommunications is not only very appealing, but also very applicable for my particular job. The training has provided me the impetus and some of the skills to begin small-scale implementation of tele-techniques in training.

Department of Rehabilitation
Seattle University
August 9, 1979

Good, comprehesive sessions; was hoping we'd go into use of satellites--and we did. Well organized, interested, excited speakers, good participation; minimum of technical problems.

Would suggest a phone survey from here to find out how many of the sites will be putting on a tele-training program and ask for feedback on how it went.